FOREST PRACTICES CODE

LANDSCAPE UNIT PLANNING GUIDE

BRITISH COLUMBIA

Ministry of Forests
Ministry of Environment, Lands & Parks

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Environment Regional and District Offices

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About This Guide

This guide provides a framework for landscape unit planning, an important component of the overall system for provincial Crown land and resource planning in British Columbia. Landscape unit planning is a cooperative initiative of the Ministry of Forests and the Ministry of Environment, Lands and Parks.

The initial phase of landscape unit planning included the development of Regional Landscape Unit Planning Strategies (RLUPSs), the delineation of all landscape unit boundaries, the determination of biodiversity emphasis (low, intermediate, high) for each landscape unit, and the finalisation of this guide. This initial phase is complete. The current priority is the development of objectives for old growth and wildlife tree retention for all landscape units. It is now appropriate and recommended that each district manager (DM), pursuant to section 4 of the Forest Practices Code of British Columbia Act, establish landscape units and, with the approval of the designated environment official (DEO), establish objectives for old growth retention and wildlife tree retention (WTR) for each unit.

Landscape unit objectives for elements of biodiversity other than old growth and WTR, (i.e., seral stage distribution, landscape connectivity, stand structure other than WTR, species composition, or the temporal and spatial distribution of cutblocks) or for other forest resources, should only be developed according to this guide and they should not delay the establishment of objectives for old growth retention and WTR. If the DM and DEO decide to develop objectives for biodiversity elements other than old growth and WTR, those elements should first be tested as draft objectives according to this guide.

In keeping with the direction of the Forest Practices Code Joint Steering Committee, this guide endeavors to ensure biodiversity conservation within the timber supply impact levels set by government. Accordingly, the guide provides clear rules on the development of appropriate objectives. When these rules are implemented, landscape unit objectives for biodiversity result in an impact on the provincial timber supply within limits established in the *Forest Practices Code Timber Supply Analysis, 1996.*

This guide draws on material from several sources:

- Biodiversity Guidebook;
- Biodiversity Guidebook Implementation: Questions and Answers;
- Forest Practices Code Timber Supply Analysis, 1996; and
- memoranda on Implementation of the Biodiversity Guidebook, August 15, 1995 and on Achieving Acceptable Biodiversity Timber Impacts, August 25, 1997, from the deputy ministers of the Ministry of Environment, Lands and Parks and the Ministry of Forests.

Where this guide differs from any of these earlier sources, its direction prevails.

This guide is also consistent with and includes material from several legislated sources:

- Forest Practices Code of British Columbia Act (the *Act*);
- Strategic Planning Regulation;
- Higher Level Plans: Policy and Procedures (*HLP:PP*); and
- Chief Forester Direction on Landscape Unit Objectives, May 25, 1998

If the *Act*, regulations, and Chief Forester direction are amended, they will take precedence over the guide where inconsistencies result.

Regular monitoring, including pilot projects and adaptive management, will be a part of the landscape unit planning initiative and, together with policy or legislative amendments, will be the basis for updating this Guide.

Updates and Additions to the Guide

The Forest Practices Branch, Ministry of Forests and the Resource Stewardship Branch, Ministry of Environment, Lands and Parks will update and improve this Guide as the ministries' staff and stakeholders acquire new information and accumulate experience in establishing landscape unit objectives. Revisions will occur in consultation with field managers in both ministries, and in conformity with any amendments to Code legislation.

For information on updates and additions or for more information on landscape unit planning in BC, contact:

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SECTION A

THE FUNDAMENTALS

Chapter 1

The Fundamentals

1.0 Introduction

Audience and Scope

This *Landscape Unit Planning Guide* is a technical reference for staff in the Ministry of Forests (MOF) and in the Ministry of Environment, Lands and Parks (MELP) responsible for developing landscape unit objectives and strategies for biodiversity and other forest resources. It also serves as a reference for statutory decision-makers, as it contains the most up-to-date, comprehensive, and preeminent government policy direction with respect to the legal establishment of landscape unit objectives under the Code. Tenure holders, public interest groups and affected individuals may also find this guide useful in understanding landscape unit planning. This guide includes:

- procedures for carrying out analyses;
- procedures for preparing landscape unit objectives and strategies for biodiversity and other forest resources;
- procedures for writing and establishing landscape unit objectives; and
- considerations for ensuring that operational plans are consistent with landscape unit objectives.

Key Landscape Unit Planning Terms

Landscape Unit Objective:

- is a statement of desirable future condition for a forest resource or forest resource use which is attainable through management action;
- may indicate management direction based on targets or thresholds derived from appendix 2 of this guide or developed through analysis; and
- is legally binding (must be formally established)

Operational plans must be consistent with landscape unit objectives.

Draft Landscape Unit Objective:

With the cooperation of affected licensees, a landscape unit objective may be implemented in draft form for a limited time to allow testing prior to legal establishment. These draft objectives:

- should not apply to landscape unit objectives for old growth management areas (OGMAs) or for WTR. These should be legally established as early as possible; and
- should be time-limited and should be withdrawn or established as legal objectives when the test period ends.

Chapter 6 provides guidance on legally establishing landscape unit objectives as higher level plans and on preparing draft objectives

Strategies:

- are descriptions of the actions that may be undertaken to achieve a draft objective or legally established objective; and
- provide advice and are not legally binding unless incorporated into the objective.

Summary of Rules for Landscape Unit Planning

Priorities for Landscape Unit Planning

- The priority is to establish landscape unit objectives for WTR and the spatial location of OGMAs in every landscape unit.

Impacts on Timber Supply

- Based on the implementation of this guide, the only landscape unit biodiversity objectives that will, in aggregate, affect provincial harvest levels will be old growth retention and WTR.
- Landscape unit planning will follow the rules in this guide and will result in an overall timber supply impact no greater than outlined in the *Forest Practices Code Timber Supply Analysis, 1996*.
- While some districts or regions may want to conduct additional analyses, the standard approach to monitoring impacts will be through pilot projects, review of OGMA statistical summaries by management units, and through the Code impact projects.

Ecological Representation

- When establishing landscape unit objectives, representativeness will not be considered at a scale finer than the BEC variant level (see appendix 1).

Old Growth Management Areas

- Apportion the target area for OGMAs by first determining how much suitable old forest exists for each landscape unit variant in the non-contributing land base. This is to a maximum of the full target area for each landscape unit variant.
- Where the OGMA target for the variant cannot be met entirely in the non-contributing land base, consider partially constrained areas prior to the non-constrained timber harvesting land base (THLB).
- In intermediate and high biodiversity emphasis landscape units, establish OGMAs to the full target determined by the analysis described in chapter 3. Where a shortfall exists, develop a recruitment strategy.
- In low emphasis landscape units, only 1/3 of the OGMA target will be established, unless it can be met using the non-contributing land base (see chapter 3 for details.)
- The criteria to capture interior forest condition and rare old forest ecosystems must be met to the limit set by the variant-level representation rule.

- The establishment of an OGMA will not have an impact on the status of existing mineral and gas permits or tenures. Exploration and development activities are permitted in OGMAs and Mines and Energy staff will be involved in the referral process to optimize OGMA placement. The preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA; however, if despite the referral process, exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA should be moved.

Full Biodiversity and Forest Resource Landscape Unit Planning

- In the initial round of landscape unit planning, objectives for non-priority biodiversity elements (e.g., patch size) or other forest resources should not be developed if it delays the establishment of objectives for priority biodiversity elements, or if it creates an impact on timber supply exceeding government policy, unless consistent with a resource management zone (RMZ) objective.
- When objectives for patch size, connectivity, seral stage distribution, stand structure (other than WTR) and species composition are developed, they should be implemented in draft status to test their feasibility for a limited period prior to legal establishment.

Regional Landscape Unit Planning Strategies

- RLUPSs should be reviewed and, if necessary, revised in consultation with headquarters staff to ensure that they are consistent with this Guide and Chapter 5 of *HLP:PP*.
- Revisions must be completed within three months of the release of this guide and must also include any required adjustments to landscape unit boundaries and biodiversity emphasis assignments.
- In making any revisions to the RLUPSs, staff must consult with forest licensees and other affected stakeholders.

1.1 Scope of Landscape Unit Planning

Landscape units are areas of land and water for long-term planning of resource management activities with an initial priority for biodiversity conservation. They are important in creating objectives and strategies for landscape-level biodiversity and for managing other forest resources. Landscape units may be used by the DM to establish objectives for any of the purposes listed under section 2(1) of the *Act*.

This guide provides procedures for preparing landscape unit objectives and strategies, including the six elements of biodiversity set out in the Strategic Planning Regulation (SPR) section 5. The technical procedures, however, focus on retention of old-growth forest and WTR.

Landscape unit planning falls into two broad categories:

a) **Biodiversity** planning

- *Priority biodiversity* planning consists of:
  - retention of old growth forest; and
  - stand structure through WTR.
- *Full biodiversity* planning consists of the six elements listed in SPR section 5:
  - retention of old growth forest;
  - seral stage distribution;

- landscape connectivity;
- stand structure;
- species composition; and
- temporal and spatial distribution of cutblocks (patch size).

b) **Forest resources** planning, which may include any of these forest resources:

- timber;
- recreation;
- water;
- botanical forest products;
- wildlife;
- forage; and
- fisheries.

PRIORITY BIODIVERSITY PLANNING

Priority biodiversity planning, old growth retention and stand structure through WTR, is the current focus of landscape unit planning.

Old Growth Retention

The establishment of OGMAs is the most important component of the Code for managing the conservation of biological diversity. With old growth forest managed as spatially fixed OGMAs, their size and location will be an important factor in operational planning. For this reason, it is essential to treat old growth forest requirements as a priority in biodiversity conservation, and to identify OGMA boundaries clearly on maps. (See section 3.0 for a short-term alternative to spatially fixed OGMAs).

In locating OGMAs, first determine how much suitable old forest, up to the full target for each landscape unit variant, exists in the non-contributing land base. OGMAs that in total equal this area must be located in the non-contributing land base. Where the target cannot be met entirely with non-contributing land, partially constrained areas (e.g., riparian management areas) must be considered prior to locating OGMAs in non-constrained THLB.

In intermediate or high biodiversity emphasis landscape units where the target cannot be met now (e.g., due to past harvesting), acceptable recruitment areas must be identified as part of the OGMA. In low emphasis landscape units, where draw down is necessary, acceptable recruitment areas must be identified through longer term strategies. Once OGMA targets are calculated using the variant-only rule, the area must be located to maximize conservation of biodiversity values subject to the use of constrained areas in the THLB.

This applies to all regions and districts, unless a region demonstrates to the Chief Forester's satisfaction that moving to a finer level of representation (e.g., site series or surrogate) will lead to no further impact on timber supply vis-à-vis the original analysis for the Code.

If an RMZ objective established as a higher level plan, requires a finer level of representation (e.g., site series or surrogate), then the RMZ objective supersedes the Chief Forester's direction. RMZ objectives may also override previous policy on permissible timber supply impact. In addition, the Chief Forester has directed Research Branch to determine whether applying old growth requirements at the variant level will present an unacceptably high risk to biodiversity.

Stand Structure through Wildlife Tree Retention

Once landscape unit boundaries are determined, WTR requirements can be determined according to chapter 3. WTR is managed at the stand level, but contributes to landscape level forest structure. Wildlife tree patches (WTPs) comprised of old growth forest and over 2 ha. may also contribute to old growth targets.

FULL BIODIVERSITY PLANNING

Full biodiversity planning requires consideration of objectives and strategies for all of the biodiversity elements listed under SPR section 5. In the initial round of planning, objectives for all of these elements should only be considered if doing so does not delay the establishment of priority biodiversity objectives and does not impact the regional timber supply. These objectives should first be developed and tested as draft objectives. In addition to old growth retention and WTR, full biodiversity planning includes:

Temporal and spatial distribution of cutblocks (Patch Size). Patch size targets permit a range of opening sizes including larger opening sizes than specified under the Code once the targets are incorporated into landscape unit objectives. Meeting patch size targets can be beneficial:

- to biodiversity, by allowing a variety of openings more reflective of the natural pattern of disturbance and reducing fragmentation; and
- to economic efficiency where larger openings reduce investments for roads and other infrastructure.

Seral stage distribution. Seral stage distributions provide a variety of different aged forests across a landscape. Significant limitations apply, however, on the development of seral stage distribution objectives. See section 3.3 on how to address this element of biodiversity.

Landscape connectivity. The BGB provides guidance on the importance of the natural connectivity characteristics of each natural disturbance type (NDT). Maintenance of connectivity should not create a timber supply impact exceeding government's policy on Code impact. Some older and mature forest connectivity is provided by riparian reserve and management zones (where they contain suitable attributes) and through other forests outside the THLB or within constrained areas, (e.g., areas with retention and partial retention Visual Quality Objectives). In areas where OGMAs are delineated, connectivity can also be managed through the strategic location of OGMAs. In areas where connectivity targets are unattainable, it is possible to improve connectivity through partial cutting and planning the distribution of cutblocks.

The application of Forest Ecosystem Networks (FENs) has changed since its introduction in the Biodiversity Guidebook. FENs represent the combination of many landscape biodiversity elements. Since legally established landscape unit objectives focus on components such as OGMAs, landscape unit objectives may not necessarily delineate or define the FEN. It will remain a useful design concept that may help in the preliminary stages of landscape unit planning.

Species Composition. To date, this element of biodiversity has been managed through a series of stand-level decisions, such as retention of certain species during harvest, and through selection of planting stock during regeneration. These stand-level choices may have retained the diversity of tree species but in some areas, past practices (e.g., fire suppression and planting) may require specific objectives to retain certain species. Unless site conversion is currently practiced, this biodiversity element could be addressed at the operational planning level in the short term, but may require specific objectives in the future.

FOREST RESOURCES PLANNING

While the top priorities for landscape unit planning are to establish landscape units and manage biodiversity, landscape unit planning can also address a range of forest resources in addition to biodiversity, including:

- timber;
- recreation;
- water;
- botanical forest products;
- wildlife;
- forage; and
- fisheries.

Chief Forester direction (*HLP:PP*) states, "in some landscape units, it may be possible to develop objectives for other resource values at the same time that concise biodiversity objectives are being developed. This should only be done based on the priorities set in the regional landscape unit planning strategy and where it does not unduly slow down the process". Existing landscape level information (e.g., from Local Resource Use Plans or LRMPs) may assist in preparing landscape unit objectives for forest resources under the Code.

Forest resources planning will be addressed in greater detail in future additions to this guide.

1.2 Management Controls and Program Monitoring

The implementation of landscape unit planning must proceed in an efficient and consistent manner across the province to achieve government's goals of conserving biodiversity and implementing the Code within approved timber supply impact levels. Management controls are critical to ensuring efficiency and consistency. The following controls apply to the implementation of landscape unit planning:

General:

- the requirement to comply with this guide when developing landscape unit objectives;
- the authority of the Chief Forester to direct DMs in the establishment of landscape units and objectives;
- the authority for the Ministers to establish RMZ objectives that prevail over landscape unit objectives; and
- the timber supply review and associated sensitivity analysis.

Specific:

- Chief Forester direction in the May 25, 1998 memo (see appendix 1) requiring a regional analysis to be submitted for his approval to permit moving to a finer scale of representation than variant;
- the Research Branch study to assess the risk to biodiversity of implementing representation at the variant level;

- the completion by each district of table 2.8 to provide an overview of old growth retention targets for all landscape units across the district. This table allows districts to assess land base impacts of achieving targets. Prior to legally establishing objectives, districts should forward this table to the Regional Manager (RM) for a regional assessment. In addition, once OGMA and WTR objectives have been developed, table 3.2 and 3.3 should be forwarded to the RM. Regions will compile the information on each set of tables and forward it, along with any comments, to Forest Practices Branch for a provincial assessment;
- the assignment of selected Forest Practices Branch and Resource Stewardship Branch (MELP) staff to a liaison role with regions to provide extension support for the implementation of this guide and the resolution of any policy issues that may arise;
- the role of the Joint Steering Committee in consultation with provincial stakeholders through the Implementation Advisory Group to deal with major stakeholder issues arising from the review of the RLUPs and the development of proposed landscape unit objectives if these cannot be resolved locally;
- a semi-annual (first year) or annual (subsequent years) program review and report; and
- the development of a detailed monitoring strategy (by early May).

1.3 Links Between Landscape Unit Plans and Other Resource Management Plans

Regional and Sub-Regional Plans

Normally, major land use decisions in regional or sub-regional plans which affect operational planning, are established by the three Ministers as RMZ objectives under the *Act*. Landscape unit objectives must be consistent with resource management zone objectives. Landscape unit objectives, for similar resource values or issues that are dealt with in RMZ objectives, may be established to provide additional detail for more effective operational planning.

Some regional and sub-regional plans may not be established as higher level plans. These plans, however, contain useful information which should be considered by statutory decision makers when developing landscape unit objectives and approving operational plans.

Local Plans

Landscape unit plans are one type of plan at the local level of detail. They are not, however, intended to replace the array of local level planning initiatives that might be undertaken on either an inter-agency or sector-specific basis. Landscape units could, however, be used as the geographic unit on which other types of plans are based. Landscape unit planning can provide a mechanism by which local planning "results" can be "translated", where appropriate, into legally established objectives under the Code.

MOF and MELP staff should review existing integrated plans at the local level (such as integrated watershed management plans, coordinated access management plans, coordinated range use plans, local resource use plans) when undertaking landscape unit planning. If these existing plans have had the benefit of substantive public review and are being implemented, their objectives and strategies should be integrated into landscape unit plans where appropriate. Such review should not, however, delay the timely establishment of landscape unit objectives and strategies for priority biodiversity elements.

8

SECTION B

PREPARING LANDSCAPE UNIT OBJECTIVES AND STRATEGIES

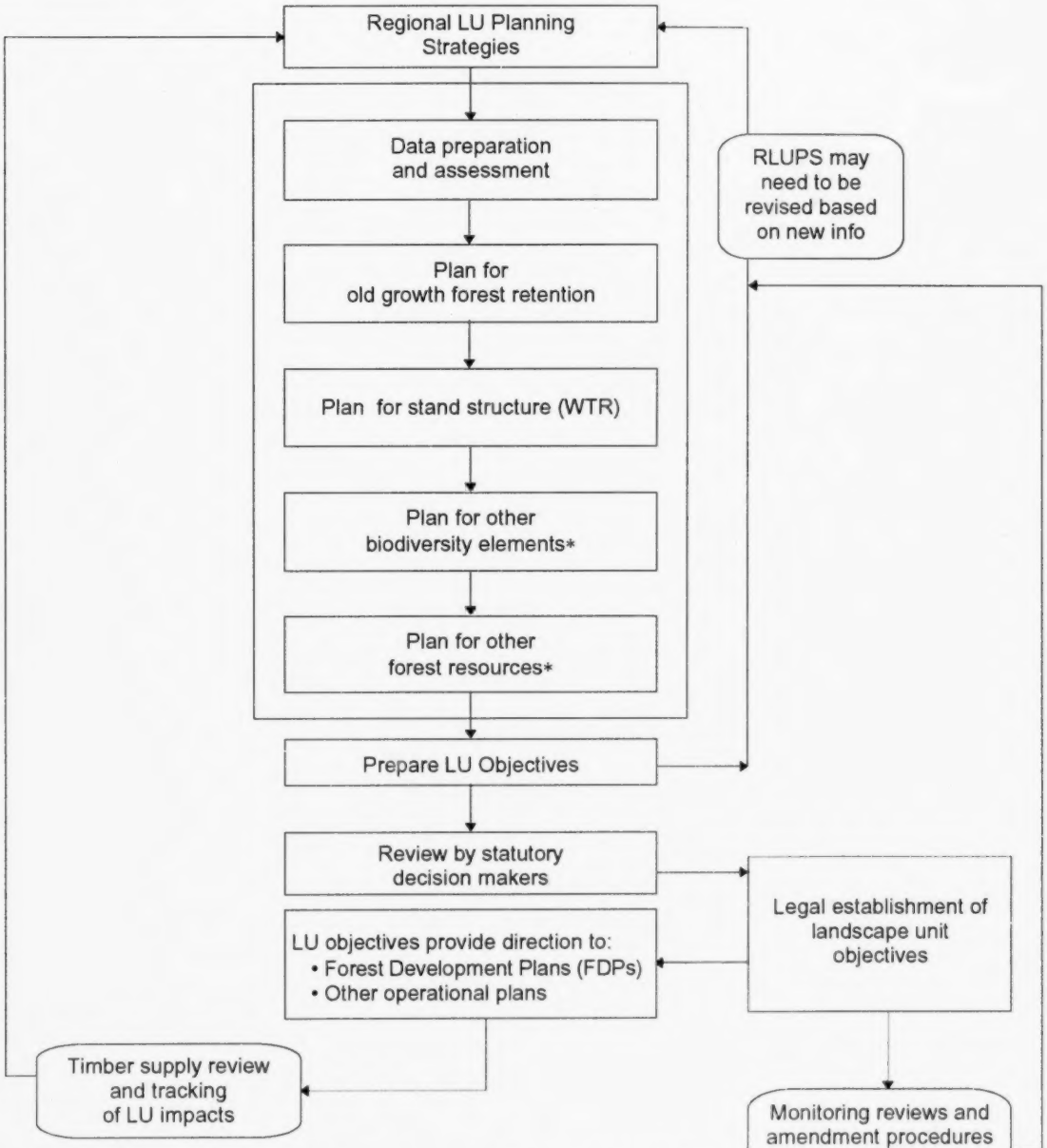
Procedures for Preparing Landscape Unit Objectives and Strategies

This section describes the technical procedures for preparing objectives and strategies for biodiversity and other forest resource values within landscape units. Once these procedures have been followed, legal objectives may be established or draft landscape unit objectives may be approved.

Figure 1, "Generalized Procedures for Preparing Landscape Unit Objectives and Strategies", presents a flow chart showing the primary components and steps in the preparation of landscape unit plans, and the relationship to establishing legal and draft landscape unit objectives.

Note: The procedures here do not completely address the six biodiversity elements listed in the Strategic Planning Regulation. Consistent with current policy direction, priority is given to addressing the preparation of objectives and strategies for old growth forest and wildlife tree retention.

Figure 1. Generalized Procedures for Preparing Landscape Unit Objectives and Strategies


Regional LU Planning Strategies
Data preparation and assessment
Plan for old growth forest retention
Plan for stand structure (WTR)
Plan for other biodiversity elements*
Plan for other forest resources*
Prepare LU Objectives
Review by statutory decision makers
LU objectives provide direction to:
• Forest Development Plans (FDPs)
• Other operational plans
Timber supply review and tracking of LU impacts
RLUPS may need to be revised based on new info
Legal establishment of landscape unit objectives
Monitoring reviews and amendment procedures for LU boundaries and objectives

*__Note__: Not all steps may be implemented sequentially (e.g., in a priority biodiversity approach, strategies for other biodiversity elements and forest resources will not be prepared).

Chapter 2

Data Preparation and Reporting

2.0 Introduction

This chapter contains the detailed technical procedures for preparing the data set required to develop landscape unit objectives for priority biodiversity elements (old growth and wildlife tree retention). The data set should be prepared for the entire planning area (TSA/TFL or District) by landscape unit prior to beginning with the next phase of determining biodiversity targets (chapter 3 of this document).

Note: It may be necessary to produce additional reports and/or include other information if the data set is being prepared to address other biodiversity elements (e.g., patch size or mature seral) or other forest resource values. The procedures and reporting requirements described below would have to be adjusted accordingly.

2.1 Definitions

The following list defines terms used throughout chapters 2 and 3. To promote a consistent approach to classifying the land base, this list reflects the Timber Supply Review (TSR) process as closely as possible.

a) **Gross landscape unit area:** Entire area within the landscape unit boundary.

b) **Non-forested area:** Non-forested and non-productive land, such as alpine, swamps, grasslands, avalanche chutes, and non-productive forest and non-commercial brush, do not contribute to meeting old growth and wildlife tree requirements and are not included in the Crown forested land base. Biodiversity seral stage forest targets and strategies are not applied to bunchgrass and alpine tundra biogeoclimatic zones, so these do not contribute to priority biodiversity targets and are removed from the Crown forested land base.

c) **Non-crown ownership:** Lands not managed by provincial government ministries, such as private land, Indian reserves and federal reserves, must be considered outside the Crown forested land base. An exception to this rule is national parks (ownership code 51) which should be included as long as the management of the forested areas of the park are compatible with developing old growth objectives. Current national park policy intends to maintain natural disturbance cycles (e.g. fires or insects). Hence, assumptions regarding current and intended extent and location of old forest seral stages in national parks will need to be reviewed with appropriate park management staff.

d) **Crown forested land base (CFLB):** The land base contributing to old growth and wildlife tree retention targets includes all Crown[1,2] forest, including tree farm license land and any private land associated with a tree farm license. The forested portions of, provincial parks (ownership codes 63-N through 67-N), protected areas, ecological reserves and federal parks as noted above should also be included in the Crown forested land base. (This is slightly different from the TSR process, as parks and protected areas would be removed from the Crown forested land base).

- **Non-contributing land base (NC):** This is the Crown forested land base that does not contribute to the AAC but that does contribute to seral stage and old growth targets. It includes parks, riparian reserves, inoperable forest, environmentally sensitive areas (ESAs) and any other area 100% removed, or area that is partially removed from the THLB, as defined by current practice for each area[3] (Timber Supply Review documents may be a good source for this information). Non-contributing land base must be used to the fullest extent possible to meet seral stage, old growth and wildlife tree objectives and targets, prior to using the timber harvesting land base.
- **Timber harvesting land base (THLB):** This is the Crown forested land base that contributes to the AAC, as defined in the Timber Supply Review, for a Timber Supply Area (TSA) or Tree Farm License (TFL). While all of the THLB is subject to management requirements such as green-up, some portions are subject to management requirements that are more restrictive, and thus allow less timber to be harvested over time. For example, the management prescription for a retention visual quality area often significantly limits the amount of timber that may be harvested. This may result in the maintenance of significant areas of older forest which can contribute to meeting old growth requirements. In another area, the minimum harvest age may exceed old growth age, which will also result in the THLB remaining in an older state. It is important to map these types of areas so that they are considered when it is necessary to delineate OGMAs in the THLB.

e) **Harvested THLB:** The area of the THLB that has been previously harvested without wildlife tree retention. This is required for the wildlife tree retention calculation, by BEC subzone.

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[1] Presently, an LU objective can only be established for crown land within the provincial forest and on woodlots and TFLs, (including private land within woodlots and TFLs). However, where crown forest land outside the provincial forest is predominantly used for timber production, draft old growth management objectives may be prepared and implemented with licensee cooperation, as per chapter 3.

[2] Further policy development is under way to determine whether woodlot licenses should be included in the calculation of biodiversity targets. Until this issue is resolved it is recommended that woodlots are taken out of the crown forested land base.

[3] Where HLPs declared by Cabinet, or the Ministers define the NC land base vs. the THLB, these must be used to refine the definitions presented in this chapter. Data base assembly and analysis would then need to be adjusted accordingly.

2.2 Data and Report Preparation

STEP 1.0: PREPARE DATA SET TO DETERMINE FOREST BIODIVERSITY TARGETS (OGMAS AND WILDLIFE TREES)

Classifying the Landscape Unit Land base – Overview

To develop old growth retention targets, it is necessary to define the land base to which they apply. In essence, old growth retention targets apply to the Crown forested land base, including portions of national parks, provincial parks and other protected areas that fall within landscape unit boundaries.

To manage timber supply impacts, it is necessary to further refine the Crown forested land base into the portion that contributes to the allowable annual cut (AAC) (i.e., THLB) and the portion that does not (i.e., the NC land base). This will permit the assessment of the degree to which old growth targets can be met in the NC prior to using the THLB. Further to this, it is important to classify the THLB to reflect the management practices which result in varying degrees of constraints on timber harvesting.

Old growth retention is to provide ecological representation at the variant level (unless otherwise provided by Chief Forester direction or an established RMZ objective). Therefore, an old growth summary report is prepared (see table 2.8) for each BEC variant in every landscape unit. To prepare the wildlife tree retention report (table 2.9), it is also necessary to determine the amount of THLB that has been has been harvested, by BEC subzone.

Note: The Forest Inventory Planning file (FIP) contains BEC classification to the variant level (confirm with regional ecologists that this is the most current information available). The ecological representation information from the technical gap analysis for the Protected Areas Strategy, produced by regional protected areas teams, may also assist in identifying ecological representation within existing protected areas.

Classification of the land base and preparation of summary reports (tables 2.8 and 2.9) offers the potential for tracking and assessing land base impacts at both the landscape unit and district levels. The detailed procedures for defining the crown forested land base, THLB and the non-contributing land bases are described in steps 1.1 and 1.2.

STEP 1.1: INVENTORIES REQUIRED FOR LANDSCAPE UNIT ANALYSIS

To create the reports and maps required for landscape unit planning, it is necessary to have a data set for the District, TSA or TFL, sub-divided by individual landscape units, that includes all or most of the digital information listed in table 2.1. The forest cover map information (FC1) and associated FIP files are the basic requirements to build the resultant data base. This resultant data base is created by overlaying the maps and information associated with tables 2.3 and 2.4 (non-corporate planning information and additional planning information). In essence the FIP file records are sub-divided into additional records as non-corporate or additional planning information is overlaid. This will also create resultant polygons for mapping purposes.

A GIS overlay is required to create the resultant database needed to derive the crown forested land base, the THLB and the non contributing land base. This data base is used to develop the old growth retention and wildlife tree reports and associated thematic maps. (This data base also contains the required information for preparing seral stage reports for NDTs 3 and 4, where appropriate).

In summary, three types of planning information are required for preparation of the resultant data base and thematic maps:

A. forest inventory information

B. non-corporate/planning information

C. additional information for map display purposes and landscape unit design. It is also necessary to track this information in the resultant data base and subsequently report those areas that are subject to higher management constraints (RMZ wildlife objectives, etc.) in the old growth summary report.

The following sections describe the required information in detail. Step 1.2 describes the detailed analysis procedures for classifying the land base.

A. Forest Inventory Information (FC1 & FIP) Using Resource Inventory Committee (RIC) Standards

Note: TFL inventories may have different structures or naming conventions, but the equivalent information should be available. TFL licensees should be requested to assist in providing the information for TFLs if this is not currently available to the Ministry of Forests. The Ministry is responsible for formatting this information to make it suitable for use in the procedures outlined in this guide.

Table 2.1. Forest Cover Map Information

#	FC1 Levels	Level	Comments
1	provincial forest boundaries	34	• may not be up to date
2	ownership	31	• includes existing parks • ownership may need to be checked and updated • check if CDMS data available from Crown Land Registry Service
3	forest cover	9 & 10	
4	biogeoclimatic units	25	• check with Research Branch, regional ecologists or LIM staff for the most up-to-date information
5	operability	32	• check if there is an alternative source for more up-to-date operability information
6	water features	5 & 6	• may want to use original TRIM hydrology for stream buffering purposes
7	roads	8, 40, 49	• MELP watershed atlas information may be more up to date
8	district / TSA boundaries	33	

FIP Attributes

The list provided in table 2.2 is not definitive. Consult your TSR document to verify which fields are required to duplicate the TSR land base classification process. If difficulties arise, contact the timber supply analyst. The following variable names are defined in the Relational Data Dictionary produced by Resources Inventory Branch, Ministry of Forests. Different field names may be generated on completion of the overlay process.

Note: FIP file must be projected to a common date using the FIPUPDATE option of VDYP batch.

Table 2.2. FIP Attributes

Polygon Records	Layer Records	Resultant Records
mapsheet_id	mapsheet_id	mapsheet_id
forest_cover_polygon_id	forest_polygon_id	polygon_id
polygon_area	for_cover_rank_cd[1]	forest_cover_polygon_id
non_productive_cd (basic_class)	for_cover_layer_cd[1]	tsa_number
esa_category1_cd	tree_species_cd_1[2]	tsb_number
esa_category2_cd	tree_species_pct_1[2]	special_cruise_number[4]
esa_wildlife_cd	tree_species_cd_2[2]	fiz_code
projected_date	tree_species_pct_2[2]	inventory_region
	tree_species_cd_3[2]	compartment
	tree_species_pct_3[2]	compartment_letter
	tree_species_cd_4[2]	ownership_cd
	tree_species_pct_4[2]	ownership_character_cd
	tree_species_cd_5[2]	result_area
	tree_species_pct_5[2]	forest_district
	tree_species_cd_6[2]	provincial_forest
	tree_species_pct_6[2]	provincial_forest_ind
	vol_per_ha_spp_1_pri_util_lvl[3]	planning_cell
	vol_per_ha_spp_2_pri_util_lvl[3]	rec_mgmnt_cd
	vol_per_ha_spp_3_pri_util_lvl[3]	rec_feature_cd
	vol_per_ha_spp_4_pri_util_lvl[3]	rec_mgmnt_class_cd
	vol_per_ha_spp_5_pri_util_lvl[3]	rec_ros
	vol_per_ha_spp_6_pri_util_lvl[3]	
	hist_site_class_cd	
	hist_class_special_site_cd	
	projected_age	
	projected_height	
	projected_type_id	
	projected_age_class_cd	
	projected_height_class_cd	
	site_index	
	inventory_type_group_number	

[1] may be deleted after rank=1 records have been selected

[2] may be omitted if species composition not required

[3] may be omitted if volumes not required

[4] can be used to identify individual TFLs, check to see if this has been changed to include new PAS areas

Table 2.2. FIP Attributes (continued)

Notes:

VERSION record: no fields required.

LAYER records: keep only LAYER records with Rank=1

HISTORY records: generally only the logging history field is required, but there are exceptions. Check this when verifying which fields are required to duplicate the TSR land base classification process. If difficulties arise, consult your timber supply analyst for advice.

B. Non-Corporate / Planning Information – Non-RIC Standards

This list includes additional information that can be used for landscape unit analysis if it is available. This information is overlaid onto the FC1 and FIP file information to produce the resultant polygons and data base. If this information is not available, make assumptions to account for the land base impact of items such as riparian reserve zones and roads. All assumptions should be documented.

Table 2.3. Non-Corporate Planning Information

#	Information	Comments
1	protected areas	• through approved regional or sub-regional land use plan or approved directly by cabinet
2	national parks	• forest inventory information available from Parks Canada and from Resources Inventory Branch
3	stream classifications & reserve zone buffers	• generated from digital elevation models or known fish habitat information or the MELP watershed atlas
4	lake classifications & reserve zone buffers	
5	wetland classifications & reserve buffers	
6	landscape unit boundaries & biodiversity emphases	
7	road buffers	• buffer roads to allow for their removal from the contributing land base
8	terrain hazard mapping or slope mapping	• if available, can replace ESA's for soils (Es1/Es2)
9	non-standard update information	• harvest openings created digitally through forest development plans or other means. This information will not be acceptable for use in TSR unless it has been audited and approved by RIB.
10	seismic lines	

C. Additional Information for Analysis, Map Display Purposes and Landscape Unit Design

The additional map information listed below generally represents the more restrictive management zones or regimes on the land base. This information is critical spatial information for mapping OGMAs as it is necessary to consider these areas as a priority for OGMA placement. It may also be useful to overlay, analyze and report this in the old growth summary reports to aid in initial assessments of potential timber supply impacts. This information could be carried into the overlay or kept separate and used to produce individual theme maps.

Table 2.4. Additional Planning Information

#	Information Type	Comments
1	Resource Management Zones	• e.g., special management zones, community watersheds
2	other strategic planning zones -	• e.g., critical deer winter range
3	existing FENs	• only existing FENS approved prior to June 15, 1995 or established as part of a higher level plan can be included here
4	visual quality objectives	
5	forest development plans	• proposed cutblocks and roads
6	TRIM contours (raw)	
7	forest health hazard assessment mapping	
8	high value recreation areas	
9	sensitive areas	
10	red/blue listed species	
11	archaeological sites / cultural heritage resources	
12	other planning information	e.g., rare old growth site series

STEP 1.2: PREPARING THE DATA SET FOR LANDSCAPE UNIT ANALYSIS BY CLASSIFYING THE LAND BASE

The following process outlines a method to produce a data base, from the resultant data base created in step 1.1, that classifies the land base for preparing old growth and wildlife tree summary reports. To prepare the data set for reporting and mapping the following codes are created X, N, P and C:

Table 2.5. Classifying the Data Set

Code	Attributes
X	Areas excluded from contributing to old growth and wildlife tree biodiversity targets (non-Crown, non-forest, non-productive forest)
N	Areas completely unavailable for timber harvesting but contributing to old growth and wildlife tree biodiversity targets (i.e., 100% removals)
P	Areas where <75% of the polygon is available for timber harvesting
C	Areas where >75% of the polygon is available for timber harvesting
Note 1: The codes P and C are used to identify and classify those portions of the land base that are only partially removed. It may be necessary to refine the % breakdown for these two categories based on the management unit (e.g., 80% or 70% may be more useful depending on the type and number of removals in a particular management unit). Another approach would be to create additional categories to account for different ranges. **Note 2**: The non-productive forest is classified as "incapable of supporting commercial forest." There are various classes of non-productive areas, two of the classes have tree species associated with them and may be appropriate to contribute to old growth requirements. The two classes are the Alpine forest[4] (with species) and non-productive forest[5] (with species). There are some inventory typing problems where occasionally some areas have been misclassified, therefore, these areas should be examined for their suitability, and should be included in code N where appropriate. This examination should not delay the process of OGMA establishment.	

[4] Alpine forest are identified in the inventory file as non-productive code (basic class) value of "10" and in the non-productive descriptor variable as AF.

[5] The non-productive is identified as non-productive code "12" with a descriptor of NP. As both NP with species and without species have the same descriptor code it is also necessary to show the tree species variables in order to determine which areas may be suitable

Defining Excluded Areas – code X – This captures all non-Crown ownership lands (i.e., the types of land ownership where the forest may not be maintained in its current state or the land is not managed by the Forest Service for timber supply). The FIP file ownership codes which are excluded are:

Table 2.6. Non-Crown Ownership

Non-Crown Ownership	
Code	**Description**
01	Status unknown
40	Private
50	Federal Reserve
52	Indian Reserve
53	Military Reserve
74	Crown and Private timber alienated in a watershed (Greater Vancouver Water District and Greater Victoria Water District only)
77	Woodlot Licenses[6]
81	Municipal Land
99	Crown Miscellaneous Leases (fairground, cottages)
Note: Ownership 74 could be part of the Crown land base if the Crown portion can be identified.	

Defining Crown Forested Land Base – Codes N, P and C – The following ownership categories are those which either contribute to timber supply or are likely to contain forest which will be maintained in its current state and can contribute to old growth and wildlife tree biodiversity objectives.

Table 2.7. Crown Ownership

Crown Ownership			
Code	**Description**	**Code**	**Description**
51	National Park	70	Timber Licenses
60	Ecological Reserve	72	Crown and Private, Schedule A&B lands (TFL)
61	Crown UREP	75	Christmas Tree Permit
62	TSA or PSYU	76	Crown and Private TFL where status unreported
63-68	Provincial Parks and wilderness areas	78	Crown Community Pasture, Prince George SSA
69	Crown Misc. Reserves	90	Crown Grazing Lease

[6] Further policy development is underway to determine whether woodlot licenses should be included in the calculation of biodiversity targets. Until this issue is resolved it is recommended that woodlots are taken out of the Crown forested land base.

Creating the Data Set

The following steps should be used to define the land base into the four categories (X, N, P and C) shown above for the planning area by landscape unit BEC variant. This method results in an Inclusion Factor for each record in the data base, which when multiplied by the AREA field will produce the timber harvesting land base value for each record in the file. The Inclusion Factor is the percentage of the AREA field which is included in the THLB. In addition, three area fields: ROADAREA, THLBAREA, NCLBAREA will be created. This method is very basic data base programming that should be useful in any data base or GIS program. Some software may have more elaborate tools available. Ensure that when using any of these tools a skilled programmer is available to do the work.

Within the data set:

1. Create and add two new fields/variables and initialize the values for every record: Inclusion Factor (set to 1) and Classification (set to F).

2. Determine the non-Crown land portion of the TSA by identifying any non-Crown land. For the ownership codes shown in table 2.6 and any others appropriate for your management unit, set the Inclusion factor to 0 and Classification to X.

3. Determine the non forested and non-productive Crown land by setting Inclusion Factor to 0 and Classification to X where the projected type identity (typid_pr or type_id_prj) is either 5, 6, or 8 (i.e., non-commercial, non-productive and no typing available).

4. Create a list of conditional statements for all categories of land base that are not available for harvest (i.e., 100% removed from the THLB). This list could include mapped riparian reserves, physically inoperable areas, high value recreation sites or wildlife habitat. The TSR documents should be consulted, for a complete list in a particular management unit. The Inclusion Factor should be set to 0 and Classification to N for areas that are 100% unavailable for harvest.

5. Create a list of conditional statements for all areas that are only partially available for harvest (e.g., an 80% reduction to hydrological ESAs). The list of partial inclusions could include terrain hazard areas, wildlife habitat, recreation management areas, unmapped riparian reserves and unmapped roads, or any area where some portion of a polygon is considered unavailable for harvest or unlikely to be harvested. Many TSR documents list the reduction percentage. In order to convert this to an Inclusion Factor, perform the following calculation:

   1 – TSR reduction percent(in decimal format) = Inclusion Factor

   After determining the Inclusion Factor for each reduction, multiply all the per cent inclusions together to determine a polygon specific Inclusion Factor. Set the Inclusion Factor to this value.

6. Add one conditional statement to examine the Inclusion Factor. If the Inclusion Factor is less than 0.75 or equal to 0.75, then set Classification to P otherwise set Classification to C. This will allow for reporting and mapping of areas where a significant amount of the polygon may not be harvested and may provide suitable old growth characteristics for OGMAs. See note under table 2.5 regarding alternate values from 0.75.

7. Create area fields/variables for the THLB, NC and roads, then calculate their areas as follows:

   THLBAREA: multiply the AREA field by the Inclusion Factor.

   ROADAREA: multiply AREA field by each Inclusion Factor prior to considering roads and then multiply by the appropriate road reduction percentage.

   NCLBAREA: subtract THLBAREA and ROADAREA from the AREA field.

8. Review the Classification field. There should be no F's, as everything should have been re-classified as X, N, P or C after completion of step 7.

9. The timber harvesting land base (THLBAREA) should be examined at this point and categorized to reflect those management requirements, prescriptions or silvicultural regimes which are likely to retain old forest characteristics from those which are not. This will have to be done on an individual management unit basis; however, a programming approach similar to the one above will be useful. After reviewing the age class distribution, the management zones and the management requirements on the THLB, it should be possible to determine a hierarchy of zones.

   Example: an HLP objective for an RMZ may produce a larger percentage of the zone's area in older forests at any time than adjacent RMZs. Thus in order to minimize timber supply impacts, the RMZ with the greater area of older forests should be classified as a higher priority for OGMA placement than the other RMZs. The hierarchy should categorize the THLB as to the areas most likely to produce older forests (high priority for OGMA placement) to the areas least likely to produce forests beyond rotation age (low priority for OGMA placement). These areas could then be placed in classes (e.g. high, medium and low) and colour coded on a map for use when delineating OGMAs.

10. The data base is now prepared to produce the summaries required to fill out the "Old Growth Retention Report" (table 2.8) as well as an area summary report that shows productive forest, NC land base, roads, THLB likely to provide older forest characteristics, the remaining timber harvesting land base, etc.

STEP 2: SUMMARY REPORTS

From the data base produced in step 1, prepare summary reports. Reports are required for priority biodiversity elements: old growth retention and wildlife trees. However, as objectives for other elements of biodiversity or other resource values are developed, it will be necessary to prepare additional reports (outlines of these reports will be presented in future editions of this guide).

Old Growth Retention Report (Table 2.8)

This report is prepared for all landscape units in an entire planning area (TSA, TFL or district). This report provides an overview of:

- the % old growth available to meet old growth targets in the NC, by variant;
- the % old growth available to meet targets in the THLB by variant, if required;
- the % of the THLB of harvestable age, a mapped representation of this will give an indication of the availability;
- the availability of forest close to the desired old growth age (e.g., within 50 years, where old growth is defined as 250 years, or within 20 years, where old growth is defined as 140 years[7])[8]; and
- the % of old growth in the THLB where the management regime would normally result in older forests being retained or perpetuated as compared to other portions of the THLB (e.g., retention VQO, RMZ objective for caribou management). These areas should be considered as a priority for OGMA placement.

Note: Old growth is defined by age for each BEC zone as described in Appendix 2. Old growth in the NC does not include non-forested or non-productive areas. Inventory typing in the NC should be confirmed.

This type of overview is useful because it allows planners to identify the following:

- priorities for proceeding with OGMA establishment;
- potential conflict between harvest availability and achievement of old growth targets;
- necessity to develop recruitment strategies; and
- the number of LUs/variants with low biodiversity emphasis that will require draw down.

Present this information on a colour themed map to improve its utility.

Table 2.8 contains the minimum amount of information an old growth report should contain, if desired, additional information can be presented.

For monitoring purposes, the DM must submit this table along with any relevant comments to the RM prior to advertising for review and comment so that THLB impacts can be evaluated. The RM should review the table and provide any feedback necessary prior to the DM advertising landscape units and objectives for public review and comment. The RMs must submit in a timely manner a compilation of table 2.8 results for all districts with comments on any policy or impact implications to the Director, Forest Practices Branch so that provincial assessments can be made.

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[7] 50 and 20 years are used for example only; planners should choose ages suitable to the forest types in the planning area.

[8] Forest cover age classes are the basis for determining old growth targets, however, they are a proxy for old growth stand structure. The forest in the "nearly old" category may be useful to consider when designing OGMAs where it is possible to assess whether these stands contain suitable old growth attributes.

Table 2.8. Old Growth Retention Report (Example)

a	b	c	d	e	f	g	h	i	j	k
Landscape Unit (forested ha) (Biodiversity Emphasis)	BEC (variant) (Crown forested ha)	Old growth age	Old growth target %	% Old NC	% Old within X years NC	% Old THLB	% Old within X years THLB	% Old in THLB OGMA priority area*	% Old in THLB within X years OGMA priority area*	% Harvestable (ha> minimum harvest age from TSR)
A (100 000)	SBS wk1 (50 000)	>140	16	20	8	8	15	1	4	40
(High)	SBS wk3 (50 000)	>140	16	20	10	10	15	0	3	35
B (100 000)	SBS wk1 (40 000)	>140	11	5	0	10	0	0	0	30
(Intermediate)	SBS wk3 (60 000)	>140	11	5	10	10	0	5	0	25
C (100 000)	SBS wk1 (35 000)	>140	11	2	2	11	4	0	0	17
(Low)	SBS wk3 (65 000)	>140	11	0	0	4	0	0	0	4
D (50 000)	CWHvh1 (25 000)	>250	19	15	20	8	15	1	4	40
(High)	CWHvh2 (25 000)	>250	19	9	10	10	15	0	3	35
E (30 000)	CWH vh1 (10 000)	>250	13	5	0	10	0	0	0	30
(Intermediate)	CWH vh2 (20 000)	>250	13	5	20	10	0	5	0	25
F (35 000)	CWH vh1 (20 000)	>250	13	5	5	14	6	0	0	20
(Low)	CWH vh2 (15 000)	>250	13	0	0	4	0	0	0	5

* OGMA priority area: classifies portions of the THLB most likely to retain older forest characteristics and thus are a high priority for OGMA placement.

- column **a:** lists all the landscape units in the TSA/TFL.
- column **b:** lists the BEC variants for each LU.
- column **c:** old growth age from the tables in appendix 2.
- column **d:** old growth target from the tables in appendix 2 based on biodiversity emphasis from the RLUPS.
- column **e:** percentage of old forest found in the **non-contributing** land base.
- column **f** : percentage of forest that will be old within X years (e.g., >120 and <140 if old = 140+ ; or > 200 and <250 if old = 250+), found in the **non-contributing** land base.
- column **g & h:** % old and almost old found in the THLB.
- column **i & j:** % old and almost old found in the THLB which has higher management constraints (e.g., retention VQOs), this is a subset of the THLB.
- column **k:** percentage of the THLB that is currently available for harvest (ha>minimum harvest age from TSR).

Note: The non-contributing land base includes all forested land within the landscape unit that does not contribute to the AAC – i.e. inoperable, parks and other 100% netted out forest types.

Wildlife Tree Retention Report

The information required for table 2.9 can be obtained by querying the data base prepared in Step 1. This table contains the information necessary to determine wildlife tree retention percentages. See chapter 3 for more details on wildlife trees.

Table 2.9. Wildlife Tree Retention Report (Example)

a	b	c	d	e	f
Landscape Unit	**BEC Subzone**	**Crown Forested (NC+THLB)**	**THLB**	**% Subzone Available for Harvest**	**%THLB Harvested**
Y	SBSwk	98 000	68 000	69%	20%
Z	SBSdk SBSmc	50 000 25000	42 000 20 000	84% 80%	30% 10%

- column **a** lists all the LUs in the planning area.
- column **b**: biogeoclimatic subzone(s) within each LU (note this is not done to variant).
- column **c**: the total crown forested land base by subzone.
- column **d**: the timber harvesting land base by subzone.
- column **e**: calculated as column **d** divided by column **c** (e.g., for LU Y: 68 000/98 000 = 69%).
- column **f**: the % of the THLB that has been previously harvested without wildlife tree retention; this normally includes any area that has been harvested using a clearcut system.

Mature Seral Stage Distribution Report (NDTs 3 and 4 only)

If objectives are developed for mature seral stage distribution as described in chapter 3, then query the data base prepared in step 1 and produce an appropriate summary table. The format for the mature report should be similar to that prepared for old growth retention (i.e., it would be essential to report the mature requirement by THLB versus non-contributing land base).

Chapter 3

Procedures for Preparing LU Objectives and Strategies

3.0 Introduction

This edition of chapter 3 is primarily focused on interpreting data and developing targets for priority biodiversity elements.

Collect relevant background information

The following points apply to the development of objectives and strategies for any forest resource.

Background information, such as higher level plan direction, specific resource management strategies, local plans, and regional priorities, should be checked to determine if any spatially defined objectives exist for the landscape unit. Identify these areas on maps to ensure that biodiversity decisions are made in concert with other relevant spatially defined objectives as appropriate.

Where there is a legally established RMZ and objectives that provide direction for biodiversity or other forest management, landscape unit objectives must be consistent with the RMZ objectives. Procedures for setting biodiversity targets and strategies, as outlined in this guide, must be modified if necessary to ensure consistency with RMZ objectives.

In some instances, government may have approved a land use plan, but may not have formalized the plan through legally established RMZs. In such cases, the land use plan may be used as information and context for decisions at the landscape unit level. In the absence of a land use plan and associated legally established RMZ objectives, follow the procedures outlined in this guide.

3.1 Planning for Old Growth Retention

The recommended approach to developing objectives for old growth retention is through the establishment of OGMAs and associated landscape unit objectives that will ensure retention and/or recruitment of old growth structure over time. (See box 1 for a short-term non-spatial, approach for developing old growth objectives).

An old growth retention report (table 2.8) should be completed for the entire planning area (TSA, TFL or district). This report, in conjunction with the RLUPS, will identify the priorities for establishing OGMAs and objectives. All OGMAs should be designed for an entire planning area simultaneously.

Box 1. Developing Non-Spatial Objectives for Old Growth Forest Retention

An alternative approach to establishing OGMAs is to develop non-spatial objectives for old growth retention. These objectives can either be legally established or they can be presented as draft objectives (see chapter 6). In either case, it is important that non-spatial objectives are time-limited, and are eventually replaced with OGMAs.

A non-spatial objective simply expresses a target percentage for old growth retention in the variant (see example objective 2 in chapter 4 of this document). An old growth retention report (see table 2.8) should be prepared for the entire planning area (TSA/TFL or district) prior to proceeding with this approach as it is necessary to assess the amount of old growth that exists in the landscape unit relative to the target amount of old growth that is required by variant. In the long term, it is desirable to establish OGMAs as described below; however, if the DM decides to use the non-spatial approach, it may allow for the overall establishment of landscape units and objectives more expediently. Generally, this approach should be an interim step and the goal is to establish OGMAs within two to three years.

Non-spatial objectives should be **avoided** in the following circumstances:

- if the amount of old growth that exists in the landscape unit is close to or below the target amount of old growth by variant;
- if the statutory decision makers do not have the ability to track the amount of old growth retention with each FDP submission;
- if there are multiple FDPs that are being submitted for a particular landscape unit; or,
- if the old growth target must primarily be met in the THLB.

STEP 1: DETERMINING THE AREA OF OGMAS THAT CAN BE PLACED IN THE THLB VERSUS THE NC LAND BASE.

The procedures for determining OGMA targets are based on the following criteria:

- old growth representation must be calculated at the variant level only. Representation may be pursued at a finer level of detail provided that an RMZ objective is established as a higher level plan and directs representation at a finer level of detail **OR** the Chief Forester permits an exception (see appendix 1); **and**
- old growth targets must be met using the non-contributing land base first.

Note: Old growth is defined by age for each BEC zone as described in Appendix 2. Old growth in the NC does not include non-forested or non-productive areas. Inventory typing in the NC should be confirmed.

To meet these criteria, produce a summary for each variant within a landscape unit which:

- documents the old growth target for each variant (from appendix 2);
- reports the area of OGMAs that will be required in the NC; **and**
- reports the area of OGMAs required in the THLB, after existing old growth in the NC has been used first to meet the old growth target.

Table 3.1 shows, for two example landscape units, the resulting OGMA targets (ha), for both the NC land base and the THLB, based on these criteria.

Note: OGMAs cannot be established within parks, protected areas, or Crown land outside the Provincial Forest; therefore, where these areas are used to achieve the old growth target for the variant, the actual total area of all OGMAs established in the NC[9] must be reduced accordingly (see table 3.1 for example)

STEP 2: DELINEATE DRAFT OGMAS

Once targets are determined, OGMAs should be delineated taking into account the biodiversity and operational considerations listed below. Document relevant considerations as in table 3.1.

Based on the criteria in step 1, there will be landscape units where no OGMAs are delineated in the THLB. However, it is still important to establish OGMAs in the non-contributing land base to ensure that old growth retention is accounted for if the THLB changes over time.

When delineating OGMAs:

- use a colour-themed map that shows old forest by variant in the NC land base vs. the THLB;
- highlight portions of the THLB where management regimes are likely to result in areas that will retain older forest characteristics (e.g., certain RMZ objectives where rotations may be extended to manage particular wildlife species; retention VQO areas);
- show rare old forest ecosystems where they are known;
- show approved cutblocks from FDPs so that operational considerations can be addressed when delineating OGMAs; and
- assess forest cover through the use of air photos, satellite images, etc. to verify potential OGMA location.

Factors to consider when delineating OGMAs

BIODIVERSITY CONSIDERATIONS

- Where OGMAs must be established (in the NC or THLB determined in step 1) to achieve variant level representation, they should be delineated to maximize their value to biodiversity conservation. The following criteria should be considered:
  - capture rare old growth site series within OGMAs, providing that their locations are known (see box 2 below for further options);
  - where it is known or can be easily determined that certain site series are absent or under-represented in the NC land base, capture these in OGMAs delineated in the THLB;
  - create OGMAs large enough to provide old growth in interior condition. Where suitable, consider clustering OGMAs along LU boundaries to increase forest interior and connectivity. Consult with adjacent districts and regions where common boundaries exist; and
  - locate OGMAs to maximize their connectivity value.

  Note: The area of OGMAs that can be placed in the THLB is limited (as calculated in step 1). Therefore, agency staff may want to priorize the above criteria on a landscape unit basis to ensure that the most critical biodiversity elements are captured. Where there is more than one possible location for an OGMA, choose the location that will minimize the impacts on the timber resource (e.g., use a retention VQO area prior to using a non-visually sensitive area, where both contain similar old growth characteristics).

[9] Parks and protected areas are considered as part of the NC land base as per directions in chapter 2.

- In LUs with a high or intermediate biodiversity emphasis, the intent is to capture the entire old growth target in OGMAs immediately. Where there is a deficit of old growth to meet the OGMA target for the THLB, or where operational considerations (e.g., approved Category A cutblocks, see below) impede the ability to achieve the OGMA target immediately, develop a recruitment strategy that indicates where and how the old growth target will be achieved in the shortest possible time-frame. Identify and proceed with establishment of recruitment OGMAs (see box 3 – Developing Recruitment Strategies).
- When it is necessary to delineate OGMAs in the THLB, older mature forest may be considered for establishment as OGMAs if:

  1. older mature forest provides important old growth attributes that are equal to or better than those provided in stands that meet the old forest definition; **and**

  2. older mature forest is better suited for biodiversity conservation (e.g., it may be possible to obtain a larger patch of older forest or better representation).

- For landscape units with a low biodiversity emphasis, the OGMA target may be drawn down by 2/3 (recommended targets, appendix 2). It is only acceptable to establish more than 1/3 of the OGMA target if it is determined through a timber supply analysis associated with the TSR that it will not cause additional timber supply impacts. The procedures for delineating OGMAs in landscape units with a low biodiversity emphasis are:
  1. If timber supply analysis has not occurred, delineate OGMAs to the fullest extent possible in the non-contributing land base.
     - If 1/3 or more of the entire OGMA target is met in the NC, then no additional OGMAs will be delineated in the THLB.
     - If less than 1/3 the OGMA target comes from the NC then delineate OGMAs in the THLB to achieve up to 1/3 of the entire target.
  2. If a timber supply analysis indicates that there will not be an impact on timber supply by implementing the full OGMA target, then at that time, delineate and establish OGMAs to the full target.

  If the full OGMA target is not delineated and established, then a recruitment strategy must be developed that describes how to meet the target by the end of the third rotation[11] (see box 3 – developing recruitment strategies).

[11] Rotation = 80 years unless otherwise agreed to by the DM and DEO, therefore, end of the third rotation is at 240 years

OPERATIONAL CONSIDERATIONS

- When it is necessary to meet the old growth target in the THLB and wherever possible, delineate OGMAs in constrained areas where management practices result in the retention of older forest characteristics, when meeting biodiversity criteria.
- Avoid locating OGMAs over cutblocks in approved FDPs (i.e., approved Category A cutblocks).
  - Only in exceptional circumstances (e.g., rare old growth site series) should OGMAs affect the approval of previously approved category A cutblocks. Specify clearly in the established landscape unit objective which cutblocks are affected.
  - Where harvesting of cutblocks in an approved FDP results in the draw down of the old growth target, develop a recruitment strategy.
- Avoid locating OGMAs where main haul roads exist or are anticipated, or allow for road development through OGMAs where no other reasonable and cost effective options exist.
- The establishment of an OGMA will not have an impact on the status of existing mineral and gas permits or tenures. Exploration and development activities are permitted in OGMAs and Mines and Energy staff will be involved in the referral process to optimize OGMA placement. The preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA. If, however, despite the referral process, exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA should be moved.
- Range use is permitted in OGMAs, and Range staff will be involved in the referral process to optimize OGMA placement. Range use must proceed in a way that is sensitive to the old growth values of the OGMA.

Box 2. Rare Old Growth Site Series

To manage rare old growth site series, clear identification and mapping is essential. The Conservation Data Center (CDC), MELP, has records of rare forested ecosystems, but, the list is not complete. When CDC information is lacking, appropriate agency specialists (e.g., FES, regional ecologist) should be consulted.

In many instances, it may be known that rare old growth site series occur in a general area but their precise locations have not been identified or cannot be mapped at the landscape unit scale. Where there is an OGMA target for the THLB, it is possible to develop an objective that uses a portion of the OGMA target to allow for protection of these ecosystems as identified during the preparation of the FDPs or SP. (See example objective 4 in chapter 4 of this guide.) To use this approach, reduce the OGMA target by the number of hectares identified in the objective to protect rare old forested site series.

Where rare old growth site series are known to exist within a landscape unit and (based on the calculation in step 1) it is determined that OGMAs cannot be placed in the THLB, then locate wildlife trees to maximize the protection of these ecosystems.

Note: Further work on the definition of rare old growth site series, and a resulting assessment of their abundance, is forthcoming. Once this work is completed, then it can be determined whether the above options for managing rare old growth site series are adequate. If they are not adequate, then management options will be presented to the Chief Forester and to the appropriate ADM MELP for decision.

Table 3.1. OGMA Targets (ha) Report[12] (Example)

a	b	c	d	e	f	g	h	i	j
LU (forested ha)	BEC variant (ha)	Old growth target (ha)	Old growth in NC* (ha)	Old growth in THLB (ha)	OGMA NC* target (ha)	OGMA THLB target (ha)	OGMA recruitment target (ha)	Harvest Opportunity (ha forest > minimum harvest age from TSR)	OGMA delineation considerations
A (100 000) high Biod. Emphasis	SBS wk1 (50000)	8000	10000 (4000 in PAS)	4500	6000	0		20 000	• Entire target met in the N-C • OGMAs should be designed and established in the NC land base to 6000 ha. • At least 2000 ha. from PAS areas must be used to achieve OGMA target. If necessary, up to 4000 ha. could be used.
	SBS wk3 (50000)	8000	10000	5000	8000	0		17 500	• Entire target met in NC. • There are no parks or PAS, therefore, 8000 ha. delineated as OGMAs.
F (35 000) low Biod. Emphasis	CWH vh1 (20000)	2600 (1/3 of ihis target is 867 ha)	1000	2800	1000	n/a	1600	4000	• OGMAs can be established in the NC to target amount (i.e., column f). Exceeds 1/3 target, no OGMAs established in the THLB. • Recruitment strategy needs to be developed for the 1600 ha in column h.
	CWH vh2 (15000)	1950 (1/3 of target is 650 ha)	0	750	0	650	1300	1050	• Delineate OGMAs up to 650 ha (1/3 of the target amount for low emphasis LUs) in the THLB. • Develop recruitment strategy for 1300 ha; old growth must be in place by the end of the third rotation. Concurrent with TSR process, determine if more than 1/3 can be met without impact.
	Total	20 550			17 000	650	2900	42 550	

* NC means the non-contributing land base (100 % net down, which includes parks and protected areas)

- column **c** = based on target from tables found in appendix 2 for the BEC variant, expressed in ha.
- column **d** = amount of existing old growth in the NC land base available to meet the OGMA target.
- column **e** = amount of existing old growth in the THLB available to meet required OGMA hectares defined in column **g**.
- column **f** = the amount of old growth from the NC that will be delineated as OGMAs.
- column **g** = column **c** minus column **d**. Where this is a negative value then the OGMAs hectares in THLB is 0, in low emphasis units this column must also reflect draw down.
- column **h** = number ha that must be recruited due to a deficit of old growth or due to draw down in low emphasis.

[12] If parks or protected areas exist within the landscape unit, it may be useful to add a column to this table which shows their contribution to achieving the OGMA target (i.e., column d could be split into two columns and report the parks/PAS NC separate from other NC).

Box 3. Developing Recruitment Strategies

Develop recruitment strategies when the entire OGMA target cannot be met due to a deficit in old growth within the landscape unit, or when draw down has been necessary. Direction regarding recruitment varies depending on the landscape unit's biodiversity emphasis.

- In high and intermediate emphasis landscape units, old growth should be recruited in the shortest possible time frame. Therefore, recruitment areas should be delineated and established as OGMAs concurrent with OGMAs that meet the old growth age.
- In low emphasis landscape units, the target amount of old growth must be in place by the end of the third rotation. Recruitment areas should be identified; these may be established as OGMAs in the future.

Delineate recruitment OGMAs according to the biodiversity and operational considerations described in step 2.

Also, if equal or better conservation values can be attained by delineating recruitment OGMAs in the NC, rather than the THLB, use the NC first. Otherwise, recruitment OGMAs can be delineated in the THLB to the target amount (column h).

STEP 3: ASSESSING DRAFT OGMAs – PRIORITY FOR ESTABLISHMENT

At the discretion of the DM and the DEO:

1. in high and intermediate emphasis landscape units:
   - legally establish old growth objectives and OGMA boundaries (see chapters 4 and 6);
   - delineate and establish OGMAs that are part of a recruitment strategy.
2. in low emphasis landscape units:
   - legally establish old growth objectives and OGMAs to 1/3 of the target unless it is met in the NC or unless a timber supply analysis associated with the TSR indicates that greater than 1/3 of the target can be met without additional impacts;
   - do not establish OGMAs designed to recruit old growth until the timber supply analysis is completed.

Prepare table 3.2 to document the actual area of forested land placed in OGMAs. This table will show the area impact of establishing OGMAs in the THLB. Submit a copy of this table to the RM for information and regional and provincial monitoring. The RM will review this information for all districts and forward to the Director, Forest Practices Branch for preparation of semi-annual or annual program reviews. Another table should be produced to document the attributes associated with the individual mapped OGMAs such as: the amount of forest interior, rare old growth site series, site series, etc.(example not provided).

Prior to legal establishment of OGMAs and associated objectives, it is also recommended that:

- forest cover labels are confirmed using aerial photos, satellite images, etc.; and
- at a minimum, a pre-selected number of OGMAs are field checked.

Table 3.2. Tabular Summary of OGMAs by Landscape Unit[13] Report (Example)

LU (biodiversity emphasis)	BEC variant	Old growth target (ha)	OGMAs delineated in NC-actual (ha)	OGMAs delineated in THLB-actual (ha)	Old growth forest in parks +/or PAs	Priority for establishment
A (H)	SBSwk1	8000	6000	0	2000	• proceed with full establishment of OGMAs
	SBSwk2	8000	8000	0	N/A	• entire OGMA target met in NC(2000ha. in PAS in wk1).
F (L)	CWHvh1	2600	1000	no OGMAs established in THLB (1600 ha recruit by end of 3rd rotation)	n/a	• establish OGMAs in NC only; no OGMAs established in THLB as >1/3 in NC. • recruitment strategy developed but not established until TSR completed.
	CWHvh2	1950	0	650 (1300 ha recruit by end of 3rd rotation)	n/a	• low emphasis establish 1/3 the OGMA target in THLB • recruitment strategy developed but not established until TSR complete.

IMPACTS TO TIMBER AND BIODIVERSITY

Assessing risks to biodiversity

As stated in the Chief Forester's direction on landscape unit objectives (May 14, 1998), the Research Branch, in consultation with MELP technical staff, is committed to reviewing the risk to biodiversity values of establishing OGMAs at the variant level of representation. The study will be used to evaluate the need to adjust this direction.

Assessing Timber Supply impacts

Delineation and establishment of OGMAs using the procedures described in this chapter are expected to keep timber supply impacts within government's commitment for landscape level biodiversity. The procedures reflect the assumptions used in the *FPC Timber Supply Analysis (Feb. 1996)*. Application of the procedures in this guide makes any further analysis unnecessary prior to establishing OGMAs.

[13] Slight modification of these tables to meet district specific needs is expected. However, at a minimum, the information contained in these examples should be presented.

3.2 Planning for Stand Structure – Wildlife Tree Retention[14]

Explanation of the data set

Wildlife tree retention is the primary method of providing stand structure. Coarse woody debris should be managed within current utilization standards.

The area to be retained for wildlife tree retention is calculated from table A3.1 or A3.2 in appendix 3 depending on whether or not landscape units and objectives have been established.

The calculation requires the following inventory information for each biogeoclimatic subzone within the landscape unit:

- Crown forested land base (NC + THLB);
- THLB; and
- the amount of the THLB harvested without WTR (stands <80 years).

See chapter 2 to determine these amounts.

Use of the data set

The WTR calculation will normally apply until the end of the rotation, unless there is a change in the definition of THLB that would be sufficient to change the WTR objective by 1% or more.

Some forest districts may allow some flexibility in the amount of WTR retention (for example ± 2%) on individual blocks, provided that the average level of retention is achieved on all blocks proposed in that subzone of the landscape unit in a given year.

The following example illustrates how to determine the wildlife tree retention percentage. It is based on the wildlife tree retention report (table 2.9).

Once WTR objectives have been developed, table 3.3 must be modified to add a column showing the % WTR required by BEC subzone. Then, forward this modified table containing information for all landscape units to the RM for information. The RM will compile these tables for all districts and forward this information to the Director, Forest Practices Branch.

Table 3.3. Wildlife Tree Retention Report by Biogeoclimatic Subzone (Example)

Landscape Unit	BEC subzone	Crown Forested (NC +THLB)	THLB	% subzone available for harvest	% THLB harvested
A	SBSwk	98 000	68 000	69%	20%

[14] For more detailed information on wildlife tree retention implementation review the following training course workbooks: Stand Level Biodiversity for Forest Managers; Wildlife/Danger Tree Assessor's course; Stand Level Biodiversity and Riparian Management for Forest Workers.

- calculate the percentage of the biogeoclimatic subzone within the landscape unit available for harvest.
- THLB/crown forested area x 100 = subzone area available for harvest (%). Example: (68,000/98,000) x 100 = 69%.
- calculate the % of the THLB harvested. Example: % of THLB harvested = 20%.
- calculate WTR requirement. Using table A3.1 (appendix 3), the level of WTR in the above data indicates approximately a 6% WTR requirement. Table 3.4 shows how the 6% value is derived.

Note: For this example, we have used table A3.1 which assumes that landscape units and old growth retention objectives have been established or will be established concurrent with the wildlife tree retention objectives. If wildlife tree objectives are established prior to all other biodiversity objectives, table A3.2 should be used. In these cases, the earlier WTR objectives must be cancelled and new WTR objectives based on table A3.1 must be established concurrent with the old growth retention objectives.

Table 3.4. Amount of Wildlife Tree Retention Required (Example)

% of area available for harvest that has been harvested without WTR retention	% of the biogeoclimatic subzones available for harvest				
20%	90	70 (69%)	50	30	10
10	7	5	3	1	0
30	9	7	5	3	1
50	11	9	7	5	3
		Target value ~ 6%			

Factors to consider when managing for wildlife tree retention[15]

Areas designated for wildlife tree retention should consist of a mix of species and stand characteristics representative of the pre-harvest stand. In general, no single retention strategy is appropriate for all sites. Factors, such as stand type and condition, tree species and windthrow hazard, create a unique set of conditions for each stand. A strategy that incorporates a diversity of approaches to wildlife tree retention is the most effective.

Where the non-contributing land base contains the appropriate wildlife tree attributes, it must be used to the fullest extent possible before locating wildlife trees in the timber harvesting land base. Where there are two areas with equal value for wildlife tree retention, choose the one that will minimize the impacts on the timber resource.

[15] Provincial wildlife tree management recommendations are currently under development. Once finalized, they will be included in the Landscape Unit Planning Guide.

Note: Objectives for the elements of biodiversity listed in section 3.2 to 3.5 should be developed as draft landscape unit objectives (see chapter 6). Additional work and testing is required before procedures for developing legal objectives will be recommended. The following sections should be viewed as work in progress subject to future revisions.

3.3 Planning for Temporal and Spatial Distribution of Cutblocks (patch size)

Concepts

- Patch size recommendations are applied by biogeoclimatic zone within natural disturbance type (NDT).
- A patch is a stand of similar aged forest that differs in age from adjacent patches by more than 20 years.
- For the purposes of this guide, patch size recommendations apply to new harvesting and any harvested or disturbed areas 20 years or younger. The patch size recommendations are implemented this way because the size and distribution of cutting units determines the size distribution of stands in the future. Patch size recommendations represent the desired future conditions and may not be achievable immediately.
- Patch size recommendations (percentage distributions) apply to the area, not to the number of blocks.
- Patch size does not necessarily equal cutblock size.
- Regulatory obligations such as green up apply to cutblocks and not to patches.
- When aggregating cutblocks to meet the large patch size recommendations, consider aggregating blocks that are as close in age as possible. The patch size recommendations should be applied cautiously and monitored to avoid potential timber supply impacts in the mid-term.
- Stand structure becomes increasingly important when implementing the large patch size recommendations.
- Patch size percentage distributions may need to be modified to ensure that they are achievable.
- Objectives for patch size should be tested as draft prior to legal establishment.

EXAMPLE

Detailed procedures for assessing patch size are still being developed. Some work has gone into automating procedures using GIS aggregation rules, but it is not readily available. In many cases, simply doing this "by hand" may be a better method.

For example, the following process could apply:

- create a tabular summary of patch sizes, similar to table 3.5, (by looking at a colour themed age class map) that approximates the current distribution and compare that to the patch size targets in appendix 2.
- use the tabular summary to establish the general size category of openings needed to meet the targets and determine whether aggregated harvest areas are necessary to meet the NDT patch size recommendations.

Table 3.5. Patch Size Distributions Report (for SBSmk1) (Example)

Patch size	Target range	Current range	Recommendation
<40 ha.	10-20%	16%	within desired range
40-250 ha.	10-20%	75%	need to decrease percentage
250-1000	60-80%	9%	need to increase percentage

A harvesting strategy to improve patch size distributions based on the above example might be as follows:

- propose aggregating 40-250 hectare cutblocks (presently comprising 75% of all openings within the landscape unit but having a target of 10-20%) into 250-1000 hectare patches (presently constituting only 9% but having a target of 60-80%). This will reduce the number of 40-250 ha patches
- propose the harvest of some new 250-1000 hectare cutblocks
- proposing some additional <40 hectare cutblocks should be a low priority
- no additional cutblocks contributing to 40-250 hectare patches should be proposed.

Large patches should be applied cautiously with regard for other values. For example, meeting the large patch size recommendation may not always be possible because of a variety of other issues such as viewscapes, important ungulate habitat, water flows and the extent of operable commercial stands.

3.4 Planning for Seral Stage Distributions (mature)

Note:

- Early seral (all NDTs) – the intention is to **not** apply the early seral requirements within landscape units **unless** a sensitivity analysis conducted as part of the next timber supply review demonstrates the early seral component would be non-constraining.
- Mature (in NDT 1 and 2) – the intention is to **not** apply the mature component of the mature plus old requirement within landscape units **unless** a sensitivity analysis conducted as part of the next timber supply review demonstrates the component would be non-constraining.
- Mature (in NDT 3 and 4) – the intention is to apply the mature component of the mature plus old requirement within landscape units **until** a sensitivity analysis conducted as part of the next timber supply review demonstrates the component would be constraining.

The following procedures apply only in NDT 3 and NDT 4.

Concepts

- Mature seral stage targets apply to the Crown forested area of each subzone within the landscape unit.
- Mature seral targets are non-spatial. They are not mapped but are tracked through a tabular summary.
- Age class targets should be expressed in terms of hectares rather than percentages so that minor changes in forest inventory do not result in a moving target. The mature age class definitions refer either to a certain age of forest or to stands with characteristics of that forest age (see footnotes under seral stage tables in appendix 2).
- For analysis, mature should be analyzed as a separate category from old seral but can later be combined in a summary table with old (mature+old).
- Where there is an excess of old in both the NC and the THLB, as identified in the report for old growth retention (table 2.8) it should be tracked as part of the mature target. Recognize that an excess of old in the THLB is available for harvest, and will not contribute to the mature target in the long run.
- Draft objectives for the mature seral stage targets in NDT 3 and 4 may be developed; however, should be reviewed prior to establishing legal objectives.

3.5 Planning for Landscape Connectivity

Concepts

- Current policy directs that maintenance of connectivity should not have a timber supply impact. It must be accomplished through strategic location of the old growth management areas, partial cutting strategies, the planned distribution of cutblocks and through existing constrained areas such as riparian reserves zones.
- Provincial procedures for analyzing connectivity do not exist.
- Appendix 2 includes guidance on the importance of the natural connectivity characteristics by NDT.
- Legally established RMZ objectives may influence how and where connectivity is managed.
- Where connectivity is addressed, it should be done through draft objectives.

3.6 Planning for Species Composition

Concepts

- The intent is to maintain a diversity of tree species, both commercial and non-commercial.
- Priority should be given to those landscape units where inventory information and/or silviculture records and local knowledge indicate that past and current management practices have resulted in significant changes in tree species.
- Species composition recommendations should be tested as draft objectives before establishing legal objectives.

SECTION C

PREPARING LANDSCAPE UNIT PLANS

Chapter 4

Writing Landscape Unit Objectives

4.0 Introduction

Landscape unit plans express resource management direction in a number of ways, including objectives and strategies. Other means of communicating management intent also include maps and resource targets. Since the objectives for a landscape unit can be established as a higher level plan, the focus of this chapter is on writing objectives. Objectives for old growth retention, stand structure and patch size are provided as examples. Considerations for writing strategies to support landscape unit objectives are also discussed in brief. For a description of the full range of tools used to express resource management direction in landscape unit plans, refer to the *Guide to Writing Resource Objectives and Strategies*.

4.1 What are Landscape Unit Objectives?

Landscape unit objectives are statements of desired future condition for a forest resource or resource use. They apply to specific geographic areas and are measurable, either directly or indirectly, as a basis for monitoring the effectiveness of a plan.

A landscape unit objective is typically structured as follows:

> "*Active verb*" a "*forest resource or resource use*" within a "*geographic location*" for a "*specified time*." If the time frame is not specified, the objective applies for the duration of the plan.

e.g.,

> Maintain old growth attributes in the SBSmc2 throughout each rotation within the old growth management areas, hereby established, as shown on map 3. (See associated strategies in example)

A landscape unit objective must be formally established by the DM with the approval of the DEO to become a higher level plan (see chapter 6.0). Once landscape unit objectives are established, forestry activities carried out through operational plans must be consistent with them.

4.2 What are Landscape Unit Strategies?

Landscape unit strategies describe suggested approaches for achieving landscape unit objectives. They outline preferred forest practices or process steps designed to assist with plan implementation. Normally, strategies are not legally binding; however, where further clarity is required for the higher level plan, strategies may be combined with landscape unit objectives and established as a higher level plan. As a general rule, strategies should only be incorporated into objectives when:

- the strategy is technically sound and deals with forest practices rather than process;
- the strategy is viewed as the only viable option for achieving the objective;
- there is a high degree of certainty that the strategy can be delivered; and
- the strategy will not need to be amended in the foreseeable future.

Table 4.1 summarizes the characteristics of landscape unit objectives and strategies.

Table 4.1. Characteristics of Landscape Unit Objectives and Strategies

Landscape unit objectives	Landscape unit strategies
• Describe desired future conditions for resources or resource uses. • Implemented through Forest Practices Code operational plans. • Legally binding when established as a higher level plan. Operational plans must be consistent with higher level plans.	• Describe how objectives will be achieved. • Implemented through Forest Practices Code operational plans. • Not legally binding. Can be given legal effect if linked to a landscape unit objective that is subsequently established as a higher level plan.

4.3 Guidelines for Writing Landscape Unit Objectives

The *Guide to Writing Resource Objectives and Strategies* contains detailed guidelines for writing objectives and strategies. This section presents a summary of those guidelines and emphasizes important legal considerations for writing landscape unit objectives.

Guideline 1 – Consider legislation and chief forester direction

Higher level plans must conform with existing legislation. In accordance with section 4(4) of the *Act*, landscape unit objectives must also comply with direction from the Chief Forester. Chief Forester direction for landscape units and objectives is contained in this guide and in *HLP:PP*.

Guideline 2 – Conform with "plans above"

Section 4(9) of the *Act* requires that an objective for a landscape unit be consistent with an objective for an RMZ established by the Minister of Forests, the Minister of Environment, Lands and Parks and the Minister of Energy and Mines. To the extent that a landscape unit objective is inconsistent with an objective for an RMZ, the objective for the RMZ prevails.

Guideline 3 – Take account of "plans below"

Direction from existing plans lower in the hierarchy, such as objectives for recreation sites and trails, strategic plans developed outside the Forest Practices Code (e.g., local resource use plans) and operational plans, should be considered when writing landscape unit objectives. Since objectives for recreation sites and trails are required to be consistent with landscape unit objectives, careful consideration should be given to any objectives for a recreation site or trail previously established within a proposed landscape unit. If an objective for a landscape unit materially conflicts with an objective for a recreation site or trail, the objective for the recreation site or trail must be amended.

Recommendations in existing local resource use plans may be reflected in landscape unit objectives, where appropriate. Although there is no legal requirement for consistency, an approved local resource use plan may provide valuable information for use in landscape unit planning.

Since operational plans are required to be consistent with landscape unit objectives, it is important to consider the effect of those objectives on existing operational plans. The *Act* requires that higher level plans include transition provisions under certain circumstances. Section 4.5 describes the requirements for transition in greater detail.

Guideline 4 – Reflect zones and geographic designations

Landscape unit objectives may be applied to specific locations within a landscape unit. Objectives regarding the retention of old growth, for example, may apply exclusively to mapped OGMAs established as part of the higher level plan.

Where zones are used, objectives and strategies for the resources should be consistent with the overall intent of the zone.

Guideline 5 – Be internally consistent

Objectives established for the same landscape unit must be internally consistent to avoid conflicting legal direction. Conflicting activities can be separated spatially or temporally, or can be resolved by assigning a clear priority to one activity over another.

Guideline 6 – Make sure it's achievable

Since higher level plans are legally binding, it is critical that landscape unit objectives are technically achievable. This guideline serves as a caution against writing highly prescriptive objectives that may not be possible to achieve.

Guideline 7 – Connect with the issues

It is important to identify management issues at the outset of a landscape unit planning process to assist with formulating clear landscape unit objectives and strategies.

Guideline 8 – Distinguish between goals and objectives

Objectives are more specific than goal statements, which establish broad aims across an entire planning area. Goals are typically expressed in timeless and qualitative terms and are not typically a component of landscape unit plans.

Guideline 9 – Distinguish between objectives and strategies

Landscape unit objectives and strategies are defined in sections 4.0 and 4.1. To keep the distinction between objectives and strategies clear, landscape unit plans should maintain a logical separation between the two. When establishing landscape unit objectives as higher level plans, however, the DM may want to establish direction that is more prescriptive than normally expressed in an objective. In such cases, the DM may choose to translate an appropriate strategy into an objective by linking the two statements in the order establishing the higher level plan (see example 5 for an illustration of how a strategy can be linked to an objective). Objectives and strategies should only be linked when there is a high degree of confidence that the strategy can be achieved.

Guideline 10 – Supplement where necessary

Situations may arise in which additional information is required to supplement the direction provided by landscape unit objectives. While it is appropriate to include this information in the landscape unit plan, the objectives themselves should not include background information (e.g., descriptive statements about the forest resources being managed). Also, landscape unit objectives should not restate existing legal requirements or reference Forest Practices Code guidebooks in their entirety. If a DM wants to legalize specific elements of a guidebook, those elements can be referenced in the appropriate landscape unit objectives. However, guidebooks in general are intended to provide guidance rather than legally binding direction.

Guideline 11 – One thing at a time

For clarity, each landscape unit objective should provide management direction for a single forest resource or resource use.

Guideline 12 – Focus mainly on the physical

Although a landscape unit plan may include process-oriented provisions (e.g., future inventory initiatives or consultation processes), a landscape unit objective established as a higher level plan directs how management activities occur on the ground. Higher level plans may only include process-oriented direction where provided for in legislation.

Guideline 13 – Identify where and when

By definition, resource management planning is spatial; therefore, identifying "where" the objectives and strategies are to apply is essential. The "where" could be an extensive geographic area or a particular site.

Most objectives and strategies in resource plans are silent on when the management direction is expected to occur. This is because it is normally expected that the management direction will apply throughout the life of the plan. There may be situations, however, when it is appropriate for an objective or strategy to apply only during certain time frames.

Guideline 14 – Name names

Agency responsibilities for plan implementation can be included in a landscape unit plan, where applicable. However, roles and responsibilities should not be referenced in landscape unit objectives.

Guideline 15 – Make it measurable

Landscape unit objectives should be measurable to permit effective future monitoring. This may be achieved through indicators used to monitor achievement of the objectives, or through resource targets, which represent a projected level of output of resources or the rate at which a desired outcome will be achieved. It may be appropriate, in some cases, to include quantitative resource targets in landscape unit objectives. However, numerical targets must be supported by information and analysis before given legal effect.

Guideline 16 – Provide detail (as appropriate)

Various factors influence the level of detail appropriate for landscape unit objectives. Landscape unit objectives should be detailed enough to convey a clear expectation of the outcome, yet generally flexible enough to allow for operational innovation. The *Guide to Writing Resource Objectives and Strategies* provides a list of factors that influence the amount of detail contained within a plan.

Guideline 17 – Say what you mean

This guideline refers to the communication of management intent through good drafting habits, such as the using active verbs, avoiding value-laden words, and using the present tense, wherever possible. Refer to the *Guide to Writing Resource Objectives and Strategies* for more detailed advice.

4.4 Varying Landscape Unit Objectives

The legal procedures for varying landscape unit objectives are described in chapter 6.0. In addition to the legal procedures, there are two methods – qualifying statements and sunset clauses – that may be appropriate under certain circumstances for varying landscape unit objectives.

A qualifying statement can be used to limit the management direction specified in a landscape unit objective. This example illustrates how an objective can be varied by the addition of a qualifying statement:

> Manage scenic area A for a visual quality objective of preservation when viewed from the Green River Road, unless removal of trees is required to treat infestations of pine bark beetle. Scenic area A is shown on Map 3.

A sunset clause can be used to impose a time limit on a landscape unit objective. For this to be effective, the sunset clause must clearly state the date or measurable condition after which the objective is no longer valid.

4.5 Transition Provisions

Section 9.1 of the *Act* requires that a landscape unit objective specify any provision that will not be implemented when the landscape unit objective is established, including the date the provision will be implemented or the circumstances that will enable it to be implemented.

Figure 2. Tests to Assess a Landscape Unit Objective

1. Is the objective appropriate for a higher level plan?
   - Does the objective describe on-the-ground forestry activities that can be implemented through an operational plan?
   - Does the objective provide unique direction not already addressed in other legislation (e.g., the *Act*) or guidebooks?
2. Does the objective contain adequate detail for effective implementation?
   - Is the information in the objective of sufficient detail that the objective can be implemented through an operational plan ?
   - Are forest resources/resource values clearly identified?
   - Is a desired future condition clearly described?
   - Is the intent of the objective clear? Is the geographic location to which the objective applies clearly defined?
   - Is the objective being phased in?
   - Is a time frame stated for achieving the objective (where necessary)?
3. Other checks:
   - Is the objective consistent with existing legislation and other higher level plans?
   - Is the objective achievable, given:
     - the current state of the landscape unit?
     - available staff and financial resources?
   - Is the objective measurable in a manner which enables agencies to assess compliance over time?
   - Is the objective communicated in value-neutral language?

4.6 Example Objectives for Biodiversity Elements

A. Old Growth Retention – Examples 1 to 4

The following examples provide guidance to staff writing objectives. They may need to be modified to reflect specific landscape units. When establishing objectives as higher level plans, it may be appropriate to incorporate some of the strategies into the objective to ensure successful implementation.

Example 1 – Old growth objective where old growth management areas have been delineated prior to establishing the objective (i.e. according to procedures in chapter 3). This objective is developed based on the requirement that a certain percentage of the variant be maintained in old growth condition. It is not necessary or advisable to include the actual percentage in the objective. However, it is recommended that the percent old growth being maintained, by variant, is included in the strategy for monitoring purposes. If the SDMs decide to include a target in an objective or strategy for OGMAs, it is necessary to ensure that the target is appropriately reduced by the amount of the target that is met in parks, protected areas or national parks (as OGMAs cannot be established within these existing designations).

Objective	Strategies
Maintain old growth attributes within the OGMAs, hereby established, as indicated on map "X".	• Commercial harvesting will not normally be permitted in OGMAs. • Within the OGMAs, these forest practices will be permitted: – cone gathering and tree topping; and – fire suppression. • Allow natural processes of insect feeding or disease to occur within OGMAs unless infestations or infections threaten to spread into areas outside OGMAs. Aim at retaining structural features of old growth where intervention is required. • Avoid road construction within OGMAs. Main haul roads should not be permitted in OGMAs unless no other reasonable and cost effective options exist. When secondary roads have been constructed within OGMAs, road deactivation should occur once operational activities are completed.

Example 2 – Non-spatial old growth objective (where OGMAs have not been delineated). The objective below contains a target. Prior to legally establishing an objective with a target, ensure that the target is achievable. Where parks or protected areas are used to meet the old growth target (from appendix 2), the target in the established objective must be appropriately reduced. It is recommended that an old growth retention report is prepared (see table 2.8) prior to proceeding with non-spatial objectives. This report will indicate, by BEC variant, the amount of old forest that exists across the forested land base. Review current FDPs to determine how much of the existing old forest is scheduled for harvest. Whenever the amount of old forest is close to or below the target amount, then delineate OGMAs prior to writing an objective (see example 1). Refer to chapter 3, box 1 for implementation and advice on using non-spatial old growth retention targets.

Objective	Strategies
Retain 14% of the forested land base in the SBSmc2 and 19% of the forested land base in the ESSFmc in old growth condition. *Old growth forest is defined as older than 140 years in the SBSmc2 and older than 250 years in the ESSFmc. (This phrase is optional: it may be prudent to allow for some flexibility by putting this statement in the strategies.)*	• In meeting the old growth targets, either delineate proposed OGMAs as described in chapter 3 of the *Landscape Unit Planing Guide*, or by showing data summaries indicating that the required amount exists on the Crown forested land base (which includes parks, protected areas and the portions of national parks where it is expected that old growth will be maintained). • Where licensees propose OGMAs, the following activities are permitted: – cone gathering and tree topping; and – fire suppression • Commercial harvesting will not normally be permitted in proposed OGMAs. • Allow natural processes of insect feeding or disease to occur within proposed OGMAs unless infestations or infections threaten to spread into areas outside of proposed OGMAs. Aim at retaining structural features of old growth where intervention is required. • Avoid road construction within proposed OGMAs. Main haul roads should not be permitted in proposed OGMAs unless no other reasonable and cost effective options exist. When secondary roads have been constructed within proposed OGMAs, road deactivation should occur once operational activities are complete.

Example 3 – Old growth objective where old growth needs to be recruited Where insufficient old growth is available to meet the target amount for intermediate and high emphasis landscape units, it is necessary to establish OGMAs that maintain the existing old growth and those designed to recruit old growth. The following objective reflects the fact that not all of the established OGMAs will have old growth attributes. For mapping purposes, it will be necessary to indicate which of the OGMAs are in a recruitment phase.

Objective	Strategies
Maintain or recruit forest with old growth attributes within the OGMAs, hereby established, as indicated on map "Y".	• See example 1.

Example 4 – Specific objective to protect rare old growth site series Where it is expected that there are rare old growth site series in a landscape unit but their precise locations are not known, a certain amount of the OGMA target (as determined in chapter 3) for the LU could be allocated to capture rare old growth site series when identified through operational plans (i.e. through BEC classification in the SP).

Objective	Strategy
Provide representation of rare old growth site series by retaining up to "x" ha of the following rare ecosystems in old growth condition as they are identified in the landscape unit: 1. ICHwk1/05 (western redcedar/hybrid white spruce – devil's club – horsetail) 2. ICHwk1/02 (lodgepole pine/western hemlock – velvet-leafed blueberry)	• There should not be harvesting within the first x ha of site series ICHwk1/05 and ICHwk1/02 identified in the landscape unit that meet old growth conditions. Where possible, these ecosystems will be incorporated into OGMAs or wildlife tree patches. • All rare old growth site series in excess of x ha. are available for resource development, however, roads, landings, or other permanent alterations to the land base should not be located within these areas. • Where rare old growth site series are harvested, the composition of tree species in the original stand will be regenerated on the site. • Any other rare ecosystems listed with the BC Conservation Data Center identified in the landscape unit will be mapped and managed on a site-specific basis. • Amend landscape unit objectives when appropriate to establish new OGMAs.

B. Stand Structure (wildlife tree retention)

Example 5 – Objective for wildlife tree retention. Landscape unit objectives for stand structure primarily focus on maintaining stand structural attributes in the form of wildlife trees (standing live trees and standing dead trees). Riparian reserves, where they exist, may capture a significant portion of the structural attributes. However, in many cases, it will also be necessary to require wildlife tree retention within the block when the requirement is not met in already excluded areas. See chapter 3 for procedures for determining wildlife tree retention levels.

Objective	Strategy
Maintain structural diversity within managed stands by retaining wildlife trees in each cut block to meet the targets for each BEC subzone in the landscape unit as indicated: BECsubzone %WTP[16] ICHwk1 7-9 ICHvk1 4-7	• Where possible retain standing live and standing dead trees in the block, both in patches and individually. • WTPs should be located to provide a range of representative stand structural characteristics. The non-contributing land base must be used to the fullest extent possible for locating WTPs.

C. Patch Size

Example 6 – Draft objective for patch size distribution. Patch size objectives should not be legally established at this time but should be presented as draft objectives only (see chapter 6). The district manager would have to use the provisions in the OPR to allow for larger cutblocks or to reduce green-up. Once it is decided to move to legal establishment, then the objective shown here enables the DM to approve harvest areas larger than specified in the OPR. In this example, the targets for patch size distribution are not put in the objective to retain implementation flexibility.

Objective	Strategies
Achieve a landscape pattern consistent with the NDTs in the landscape unit by: • providing a range of opening sizes up to 250 ha. in NDT 1 and up to 1000 ha. in NDT 3; • creating cutblocks greater than 40 ha. where the DM (and designated environment official, if required) deems appropriate and where they are consistent with other resource values and objectives; • reducing green-up requirements to create large openings where the DM deems appropriate and where they are consistent with other resource values and objectives.	• The following distribution of patch sizes (harvest area) over the term of each FDP is recommended: ≤40ha 40-80 ha 80-250ha NDT1 30-40% 30-40% 20-40% ≤40 ha 40-250 ha 250-1000 ha NDT3 10-20% 10-20% 60-80% • Achieve targets for larger cut areas (>80 ha) by amalgamating existing small cutblocks (<40 ha) of less than 5 years. • Retain structural attributes in all cutblocks • Preferred order for achieving large cutblocks: 1. amalgamate existing cutblocks 2. enlarge existing cutblocks 3. create new, large cutblocks

[16] May be presented in hectares rather than %.

Chapter 5

Outline and Content of a Landscape Unit Plan

5.0 Sections in a Plan

Landscape unit plans generally contain three main sections. The first section is introductory. The second contains legal objectives directing operational plans, draft objectives, and non-binding strategies (recommended approaches to achieving the objectives). The third contains information that supports the plan.[17]

SECTION 1:

- legal orders and approvals; and
- introduction and statement on how to use the plan.

SECTION 2:

- a list of legal objectives with which operational plans must be consistent;
- the draft objectives implemented with the cooperation of licensees. (Draft objectives should be time limited (e.g., two to three years) and are included to test or assess their effectiveness. Once the test period is finished, draft objectives should be revised, if necessary, and established as legal objectives); and
- the strategies indicating appropriate but non-binding ways to achieve the objectives. (Some strategies may be incorporated into the objectives to make them legally binding).

SECTION 3:

- implementation strategies and plan administration; and
- relevant direction from other Higher Level Plans.

Planning teams may find it useful to provide background information in an appendix such as a description of resources and resource uses, a biophysical description of the area, any rationales for the management direction in the plan, or other information not immediately required to implement the legally established objectives.

[17] The first round of landscape unit plans will focus on initial biodiversity priorities. Over the longer term, and as outlined in this chapter, landscape unit plans are expected to deal with a broader range of forest resources.

5.1 Content of Landscape Unit Plans

Table 5. Content of Landscape Unit Plans

Introduction	Objectives and Supporting Strategies	Information that Supports the Plan	Appendices
Copy of the order establishing the landscape unit and objectives as a higher level plan Letter of approval of the landscape unit and objectives signed by the DEO Introduction section How to use this plan section	Landscape unit objectives as higher level plan:* • old growth retention; • wildlife tree retention; • transition (see the *Act*, s9.1); • category A cutblock direction if required (see OPR s21); and • forest resources. Draft objectives: • full biodiversity elements; and • forest resources.* Strategies as advice accompanying the landscape unit objectives Any maps referred to in the landscape unit objectives**	Implementation and monitoring strategies and schedules Review and amendment procedures A summary of other higher level plans including RMZ objectives that apply directly to operational activities in the landscape unit	Appendices or companion document to the plan, such as: • profile of resources and resource uses; • biophysical description of the unit; • description of the social, cultural and economic history of the area; • summary of analysis and assessments including derivation of targets; • description of the public involvement strategy; and • summary of public input.

* Objectives and strategies should be grouped according to resource value (e.g. biodiversity, wildlife, timber) or by geographic unit (e.g. OGMA) with a brief introduction preceding each group of objectives.

** **Note**: Maps will have legal significance when they are cited in higher level plan objectives. If maps are not cited in the objectives, they are considered information only.

Chapter 6

Establishing Landscape Unit Boundaries and Objectives

6.0 Introduction

This chapter deals with the establishment process for landscape unit boundaries and objectives in conformance with legislation and Chief Forester direction. Advice is also provided on draft objectives and legal considerations in developing and implementing landscape unit plans.

6.1 Approval Formats for Landscape Unit Boundaries and Objectives

Landscape unit boundaries are legally established pursuant to section 4(1) of the *Act*. The content of landscape unit plans, however, may be approved in three formats. Each of these formats has varying degrees of influence on Code operational plans:

- legally established landscape unit objectives;
- draft landscape unit objectives (to be cooperatively tested with licensees for a time limited period); and
- strategies and other information as advice or guidance.

Legally established landscape unit objectives

Most of this chapter deals with how and when to establish landscape unit objectives. For convenience and to be consistent with references in the legislation, this section refers to legally established objectives as *landscape unit objectives* and refers to material being prepared for legal establishment as *proposed objectives*.

The Code also authorizes the DM to establish, vary or cancel landscape unit objectives by written order consistent with regulatory requirements and directions of the Chief Forester. The DM must obtain the approval of a DEO prior to establishing, varying, or canceling a landscape unit objective for a forest resource other than recreation.

Under the Code, the Chief Forester may give direction to the DM on the establishment of landscape units and objectives. The Chief Forester provides this direction primarily in *Higher Level Plans: Policy and Procedures* (December, 1996). This direction must be followed.

Section 4(1) of the *Act* states that landscape unit objectives can only apply to Crown land in a Provincial Forest and private land in a TFL or woodlot license. Furthermore, as landscape units can only be managed and used consistent with the purposes in section 2(1)(d-h)of the *Act*, objectives may only deal with these same purposes:

a) timber production, utilization and related purposes;
b) forage production and grazing by livestock and wildlife and related purposes;
c) recreation, scenery and wilderness purposes;
d) water, fisheries, wildlife, biodiversity and cultural heritage resource purposes; and
e) any purpose permitted by or under the regulations.

Section 4(3) of the *Act* states, "The district manager must establish objectives for a landscape unit and may vary or cancel an objective." Section 5 of the SPR sets out more specific content for biodiversity:

a) retention of old growth;
b) seral stage distribution;
c) landscape connectivity;
d) stand structure;
e) species composition; and
f) temporal and spatial distribution of cutblocks.

The short-term priority for landscape unit planning is to establish objectives for old growth retention, and wildlife tree retention.

Landscape unit objectives provide statutory decision-makers with the legal capability to manage biodiversity and other forest resources. FDPs must be consistent with these objectives and, when there is no FDP, other operational plans must also be consistent with the objectives. A landscape unit objective must be written clearly and the decision-maker must understand the limitations that the objective places on operational plans.

To facilitate operational planning, licensees must have enough flexibility to respond to site specific circumstances or to apply innovative technological and professional solutions to deal with problems. However, the limits to this flexibility must be clear in the established objective.

Flexibility exists in the process for legally establishing landscape unit objectives to deal expeditiously with new information or other changing circumstances. The process is less complex and time consuming than establishing, varying or canceling RMZ objectives which must be approved by the three Ministries. The establishment of landscape units and objectives is a technical design exercise managed and approved at the district level by the DM and DEO. Landscape unit objectives also may use transition statements as a way to incorporate new information as it becomes available.

Draft Landscape Unit Objectives

Draft landscape unit objectives may be used to test objectives to gain a better understanding of their implications before proceeding to legal establishment. Work on developing and testing draft objectives should be coordinated regionally to reduce duplication and promote efficient use of staff and analytical resources. Draft landscape unit objectives can never be used to circumvent the legal process for establishing objectives.

From this fundamental principle certain other principles apply:

1. Licensee cooperation is voluntarily; licensees who do not choose to cooperate cannot be forced to make their FDPs consistent with a draft landscape unit objective.

2. Draft landscape unit objectives cannot have any impact on the timber supply. To support an adjustment to the AAC, a landscape unit objective will have to be legally established.

3. The intent must always be to establish a landscape unit objective in accordance with the legal process, and the test run must be for the purpose of making sure it will really work as planned. Once satisfied that it will work, the DM should immediately move to establish it legally (at which point, and no sooner, it will become a legal requirement that licensees follow, and which can be reflected in the next AAC determination). If it does not appear to work, it must be dropped completely. It cannot continue to remain indefinitely in draft form.

Biodiversity elements other than old growth and wildlife tree retention are prime subjects for draft landscape unit objectives. A testing period prior to legal establishment will allow districts to get on with the priority of old growth and wildlife tree retention without getting bogged down in some of the current uncertainty around developing these other objectives.

When preparing draft landscape unit objectives, always include the period during which the objective applies. The landscape unit plan must also describe the cooperative arrangements developed with licensees to test the draft objectives and the process for making a final decision on establishing or eliminating the draft objectives.

Landscape Unit Plan Content as Information to Operational Level Plans

The least formal, most flexible approach in landscape unit planning is where content is information to be used at the licensee's discretion. Ministries may go so far as to request the licensee to consider the information, with no obligation to follow its guidance and no ability to enforce compliance. This applies to some of the strategies and all of the background information.

DM policy (and DEO policy where joint approval is required), conveyed to licensees in advance of their FDP submission, can clearly inform licensees about information that the DM and DEO will consider when reviewing and approving operational plans. DM policy may serve to focus licensees on critical information. Potentially, most of the strategies developed in support of landscape unit objectives can be referenced in DM policy as material that the DM will consider in determining whether operational plans are consistent with LU objectives.

6.2 When to Establish Landscape Unit Boundaries and Objectives

General

A landscape unit and its objectives should be established simultaneously, ensuring efficiency in implementation (*HLP:PP*). Several landscape units and their objectives may be established simultaneously for greater efficiency. This can be accomplished by advertising multiple units and their objectives both for public review and comment and notice of impending order. This means that maps, orders for filing, and statements of objectives must be ready for each landscape unit prior to advertising. This does not mean that all landscape units must have the same or similar objectives.

It may be preferable to establish a subset of objectives for a specific unit, if that is all that is ready, when a batch of landscape units goes through the establishment process. When the rest of the objectives for the unit are finalized, they can be readily established at that time and added to the earlier set of legal objectives.

It is appropriate to establish a landscape unit and its objectives when:

- the objectives have sufficient, suitable content to guide operational plans and on the ground forest practices;
- the objectives are consistent with legal requirements in the *Act* and SPR, with Chief Forester direction and this guide; and
- the timing of establishment is consistent with the RLUPSs.

RLUPS

In reviewing the RLUPS schedules for landscape unit planning, the establishment of landscape units and objectives should be considered sooner, rather than later, in the following circumstances (*HLP:PP*):

- there are limited options for retention of rare old growth site series;
- licensees have active operations in the landscape unit;
- a high degree of conflict between timber harvesting and other resource values is expected (e.g., high value wilderness recreation opportunity); or
- there is a high risk to biodiversity and low risk to timber harvesting opportunities.

Priorities for establishing landscape units and objectives also will be affected by the level of data gathering and analysis. It may take up to three years to establish all landscape units and objectives for old growth and wildlife tree retention. When setting priorities in the RLUPS and if disagreement occurs with stakeholders that cannot be resolved locally, refer the issue to the Code Joint Steering Committee. The Joint Steering Committee will consult with the Implementation Advisory Group and provide advice in a timely manner to the region or district.

6.3 Steps for the Legal Establishment of Landscape Unit Objectives

Landscape units and objectives should be consistent with the approved RLUPSs (section 5.8, *HLP:PP*). Once biodiversity emphases have been assigned and a decision has been made to establish landscape units and objectives, the DM must follow the steps in figure 3 and outlined below for legal establishment of landscape unit objectives.[18]

The following steps for legal establishment of landcape units provide a general picture of landscape unit planning. To ensure compliance with legislation and Chief Forester direction, staff must consult legislation and the *HLP:PP* when preparing objectives for establishment.

STEP 1 – DEVELOP PROPOSED LANDSCAPE UNIT OBJECTIVES

Develop proposed landscape unit objectives according to the steps in this guide. Additional reference material may be found in the *Guide to Writing Resource Objectives and Strategies*.

STEP 2 – PREPARE AN ORDER FOR LANDSCAPE UNIT OBJECTIVES

1. Determine when the landscape unit and objectives will take effect

The basic principles are to provide adequate notice to affected parties and to allow a smooth transition for operational plan compliance with the higher level plan.

In determining when the order will take effect, the DM should consider the timing of submission and approval of operational plans in the area and the direction in the RLUPS.

The *Act*, section 10(1)(d)(ii), states that an FDP must be consistent with a higher level plan in effect four months before the date when the FDP is submitted for the DM's approval or given effect by the DM, unless the higher level plan specifies otherwise. In essence, this gives a four month transition period for the FDP. The DM may establish a landscape unit objective to override this provision if necessary. Normally, the four month rule of section 10 of the *Act* should apply.

Under the SPR, the default for the HLP order coming into effect is six months after the order is filed with the RM. The DM should shorten this so that there is sufficient time to advertise a notice of impending order (two to four weeks). The four month rule of section 10 of the *Act* normally provides for adequate transition.

2. Prepare order establishing the landscape unit

Draft an order that establishes the landscape unit and objectives, including the date the order takes effect, and attach the objectives and map (see appendix 4, *HLP:PP* for sample format of order).

[18] The same steps are to be followed for varying or cancelling landscape units or objectives.

3. Refer order for agency review

Send the draft order, a map showing the location of the proposed landscape unit, and associated documents to appropriate agencies for review. Unless otherwise specified in a regional agreement, ask agencies to provide comments within forty five days. According to part 2, section 4(5) of the *Act*, the DEO must approve all objectives (with the exception of recreation objectives) before they are established. Make revisions as necessary. The DEO must approve the revisions.

STEP 3 – CONDUCT PUBLIC REVIEW

Determine whether the public will be significantly affected by the establishment of the landscape unit or its objectives.[19]

If public review and comment are required, prepare a notice for newspaper(s) inviting public review and comment. The notice must include the location of the landscape unit and state that specified information on the LU is available at MOF regional and district offices. It must also specifiy the term of the review period (normally sixty days).

STEP 4 – FILE ORDER AND MAP WITH RM

Once the review period has expired and the written approval of the DEO has been obtained on any revisions to the landscape unit boundary or objectives, file the order with the RM. The regional office must have a file registry system to accommodate legal documents.

STEP 5 – PREPARE NOTICE OF IMPENDING ORDER

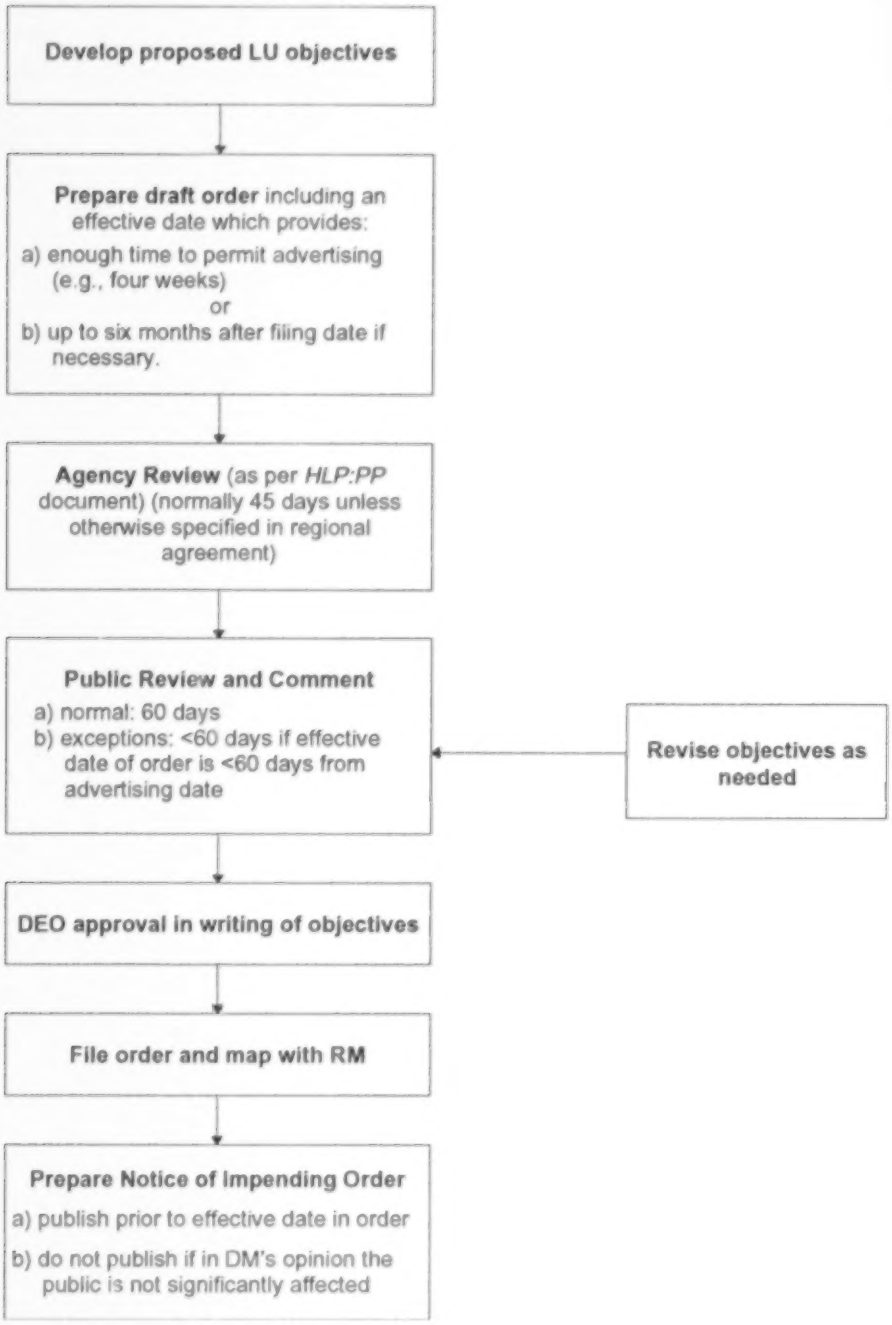
If the public will not be significantly affected by the establishment of the landscape unit or objectives, a newspaper notice is not required and the order and map can be filed directly with the RM.

If public notice is required, a notice of impending order must be published in a newspaper including the location of the landscape unit, stating that specified information on the LU is available at MOF regional and district offices. It must also specify the term of the viewing period (normally sixty days).

The RM will make the order, maps and related documents available for viewing at regional and district offices for sixty days. After sixty days, this information must be available upon request. (section 5.21, *HLP:PP*)

[19] Public and stakeholder involvement in landscape unit planning is outlined in the RLUPS. The amount of involvement will vary with the issues in a given area. However, it is expected that the planning process will be primarily a technical exercise and that the normal review and comment period will be sixty days as outlined in the Code regulations.

Figure 3. Steps for Legal Establishment of Landscape Unit Objectives


Develop proposed LU objectives
Prepare draft order including an effective date which provides:
a) enough time to permit advertising (e.g., four weeks)
or
b) up to six months after filing date if necessary.
Agency Review (as per HLP:PP document) (normally 45 days unless otherwise specified in regional agreement)
Public Review and Comment
a) normal: 60 days
b) exceptions: <60 days if effective date of order is <60 days from advertising date
Revise objectives as needed
DEO approval in writing of objectives
File order and map with RM
Prepare Notice of Impending Order
a) publish prior to effective date in order
b) do not publish if in DM's opinion the public is not significantly affected

6.4 Managing Landscape Units That Cross Forest District Boundaries

Draft landscape unit boundaries may cross two or more administrative boundaries of different forest districts. Where possible, without compromising ecological integrity, a draft landscape unit should lie entirely within one forest district. This ensures clear statutory responsibilities under the *Act* and avoids potential administrative difficulties.

For established landscape units that cross forest district boundaries, agreements should be developed for DMs and DEOs to coordinate the preparation of objectives and strategies. In these situations, landscape unit planning teams should work cooperatively to develop compatible landscape unit objectives and strategies.

A landscape unit could be separated into areas A and B along the administrative boundary, with each DM establishing compatible objectives in the two areas. It is important in cross-boundary situations that the DM exercise his/her discretion in establishing objectives.

Chapter 7

Resolving Disputes

7.0 Resolving Disputes Associated with Preparing or Establishing Landscape Unit Objectives

Dispute resolution in landscape unit planning must be consistent with the authority granted to statutory decision makers. Neither the DM nor DEO can be fettered in their decision making. There are currently, however, two means other than legislation to limit DM and DEO decisions – Chief Forester direction under section 4 of the *Act* or an RMZ objective established by the Ministers. Except for the resolution of disputes through these two means, dispute resolution must be viewed as advice for statutory decision makers to consider when making final decisions.

7.1 Dispute Resolution Principles

This dispute resolution process outlined below exists to resolve major disagreements between ministries on issues associated with the preparation of landscape unit objectives and strategies. It is based upon existing regional dispute resolution agreements (or MOUs) between MOF and MELP regarding joint administration of the Code.

Guidance on the resolution of issues or disagreements with stakeholders is provided in section 1.2, Management Controls and Program Monitoring, and in section 6.2, When to Establish Landscape Unit Boundaries and Objectives.

Most disputes originate when staff are preparing landscape unit boundary and objective decisions for statutory decision makers. The majority of disputes will be resolved at the technical or professional level through ongoing consultation on issues before initiating a formal dispute resolution process. Disputes should be resolved to the mutual satisfaction of involved parties at the earliest possible stage in the process.

Staff on LU planning teams may elevate a dispute formally to their immediate supervisors or they may involve a mutually acceptable facilitator to help negotiate a solution. Prior to initiating a formal dispute resolution process, staff on LU planning teams should also seek guidance from the Regional Landscape Unit Planning Team (where one has been formed). If this approach does not work, the team should outline the nature of the dispute and forward it to the statutory decision makers (DM, DEO) for resolution.

If resolution remains unattainable, the involved parties should follow the formal dispute resolution process outlined below. The resolution of disputes will be guided by the following principles:

- disputes will be resolved as expediently as possible;
- disputes should be resolved at the technical or professional level; and
- initiation of a formal dispute resolution process is considered the last course of action and, as such, should only be used when other attempts at finding solutions have failed.

Recommendations generated during the dispute resolution process will be conveyed to the DM and DEO for their consideration in making a final decision but are not binding.

7.2 Formal Dispute Resolution Process

Step 1

The formal dispute resolution process is initiated by the DM/DEO filing a notice of the dispute (including a summary of the issue, respective positions, efforts to reach resolution, and recommendations for consideration) with their respective RM/Regional Director (RM/RD).

Step 2

The RM/RD will either:

a) jointly agree on a recommended resolution to the dispute and inform the DM and DEO of the outcome; or

b) if they do not reach agreement, appoint an inter-agency review team of individuals from within or outside their respective offices who are not directly involved in the issue but knowledgeable in the subject matter.

Step 3

The review team will make recommendations to the RM/RD within a specified time period. The RM/RD will then either:

a) accept the review teams recommendations and inform the DM/DEO of this outcome. (Where the review team cannot reach a consensus on an issue go to STEP 3 b); or

b) reject the review team recommendations and appoint a review committee of two managers from areas outside the region to address technical issues, or refer the issues directly to the relevant ADMs, including the Chief Forester, for resolution of policy issues.

Step 4 – Technical Issues

The review committee will make recommendations on technical issues to the RM/RD within a specified period. The RM/RD will then either:

a) accept the recommendations and inform the DM/DEO of the outcome; or

b) reject the recommendations and refer the issue to the next senior level of authority — Assistant Deputy Ministers (ADMs) of the involved Ministries

Step 4 – Policy Issues

The ADMs may either:

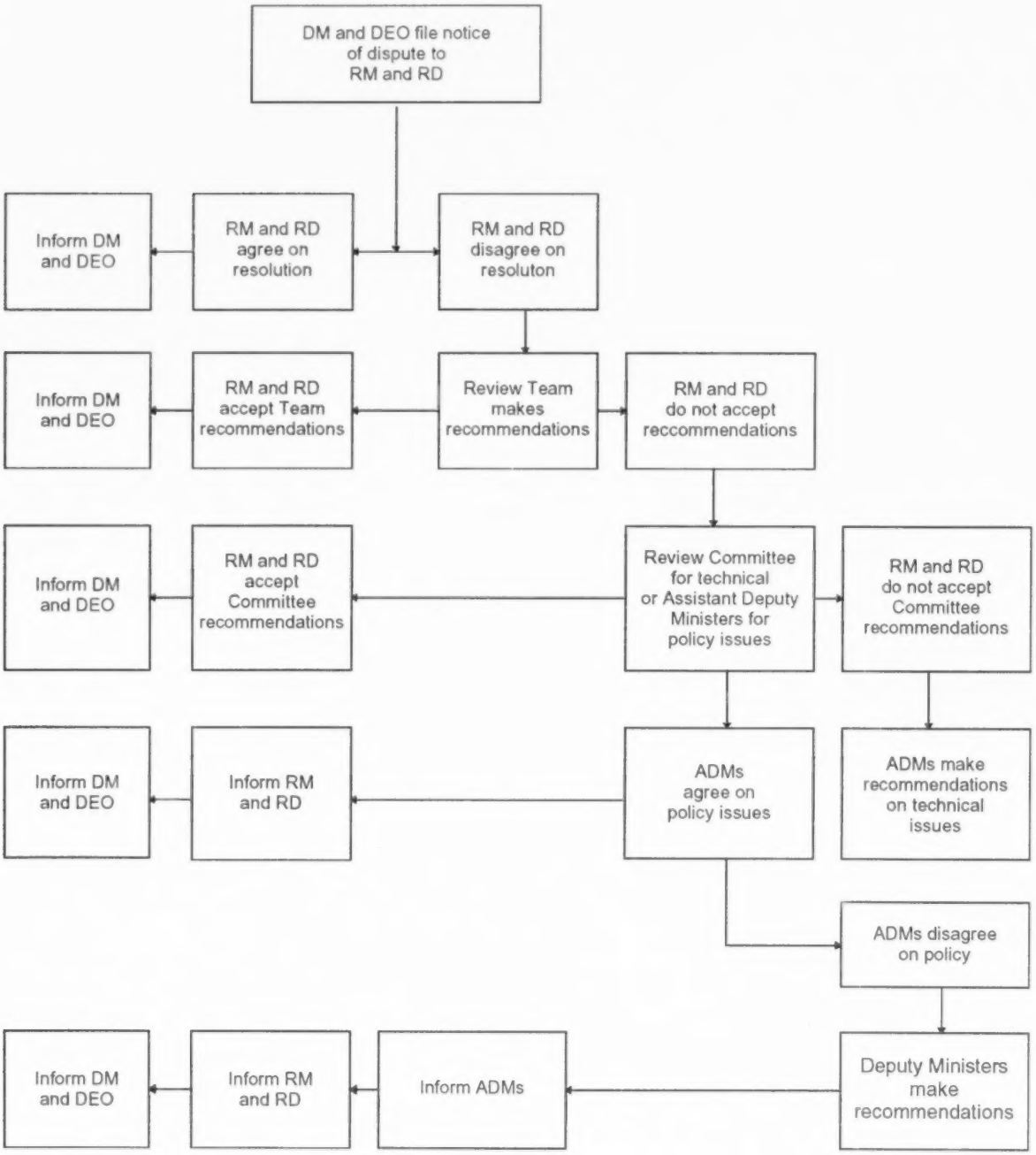
a) jointly agree on a determination on any disputed issue referred to them. On policy issues, they may choose to clarify or adjust policy to guide the disputing parties. Such direction or determinations from the ADMs will be reported back to the DM/DEOs and appropriate regional staff for action. On technical issues referred to them, the ADMs may make final recommendations. These will be reported back to DM/DEOs and appropriate regional staff for action; or

b) refer the issue to the respective Deputy Ministers. Deputy Ministers may make recommendations to statutory decision makers such as the Chief Forester on matters of policy clarification or adjustment or to the DM and DEO on policy implementation. The final determination would be communicated to the DM, DEO, RMs and RDs for appropriate action.

Two other options for dispute resolution may exist in some cases:

- the Chief Forester can provide specific direction to the DM; and
- the authority to establish RMZ and related objectives may be delegated to the RM/RD solely for settling disputes over objectives at the landscape level (LU objectives must be consistent with RMZ objectives). Alternatively, the Ministers may directly establish a specific RMZ objective to resolve the dispute.

Figure 4. Dispute Resolution Process


DM and DEO file notice of dispute to RM and RD
Inform DM and DEO
RM and RD agree on resolution
RM and RD disagree on resoluton
Inform DM and DEO
RM and RD accept Team recommendations
Review Team makes recommendations
RM and RD do not accept reccommendations
Inform DM and DEO
RM and RD accept Committee recommendations
Review Committee for technical or Assistant Deputy Ministers for policy issues
RM and RD do not accept Committee recommendations
Inform DM and DEO
Inform RM and RD
ADMs agree on policy issues
ADMs make recommendations on technical issues
ADMs disagree on policy
Inform DM and DEO
Inform RM and RD
Inform ADMs
Deputy Ministers make recommendations

Chapter 8

Public Involvement

8.0 Public Involvement in Preparing and Establishing Landscape Unit Objectives and Strategies

This chapter describes the legal and policy basis for public involvement, identifies potential participants and describes possible roles for these parties in the preparation of landscape unit plans.

The term public includes tenure holders, First Nations, other provincial ministries, and public interest groups.

Landscape unit planning is primarily a technical exercise, the nature and extent of public participation will be determined by the DM and DEO in each forest district. The specific nature of contributions and roles of government agencies and other participants should be described for each landscape unit in the RLUPS or in more detailed district strategies.

8.1 Guidelines for Public Involvement

Legal direction

Strategic Planning Regulation

Section 4(1) of the SPR contains baseline requirements for public participation in the preparation and establishment of landscape unit objectives and strategies.

Landscape units and objectives: review and comment

4.(1) Before establishing, varying or canceling a landscape unit or objective under section 4 of the *Act*, the district manager must publish in a newspaper a notice stating

a) that a landscape unit or objective is proposed to be established, varied or canceled under section 4 of the *Act*,

b) the location of the landscape unit

i. that is proposed to be established, varied or canceled, or

ii. to which the objective proposed to be established, varied or canceled relates,

c) that the following are available at the ministry regional office and district office:

   i. a copy of the proposed order establishing, varying or canceling the landscape unit or objective;

   ii. in the case of a landscape unit, a copy of the proposed or established objectives for the unit;

   iii. a map showing the location and boundaries of the landscape unit

      - that is proposed to be established, varied or canceled, or

      - to which the objective proposed to be established, varied or canceled relates; and

d) that comments on the proposal may be delivered to the ministry regional office or district office within 60 days of the date of publication in the newspaper."

There are some exceptions to the above requirements laid out in the *Act* and the SPR. Current legal advice suggests that, subject to the exceptions in the *Act*, these requirements are considered a baseline. A DM may permit more public participation before making a decision.

Policy direction

Chief Forester Policy

Chief Forester Policy in section 5.17.2 of *HLP:PP* enables the DM to seek public and First Nations involvement beyond the minimum requirements contained in section 4(1) of the Strategic Planning Direction:

> Minimum legal requirements
>
> The provisions for public review and comment in the Strategic Planning Regulation section 4 and in this section of this manual represent the minimum requirements as stated in legislation. Public and First Nations involvement, in addition to these requirements, may be approved by the district manager in some instances, if he or she wants additional information for consideration in making a decision. The regional landscape unit planning strategy is the primary means to determine areas where a greater emphasis on public participation is required.

Other guidelines for public involvement

- Public involvement is a part of the landscape unit planning process.
- The expected level of public involvement for each landscape unit should be described in the RLUPSs or in other detailed district strategies.
- In many cases, the public will have been involved in creating land use objectives through regional plans and LRMPs, some of which have become higher level plans. This may lead to a reduced requirement for public involvement at the landscape unit level except in remaining contentious areas or areas identified in these plans as appropriate for more intensive public involvement in future planning.

- Landscape unit planning will focus initially on developing objectives for biodiversity. This process will primarily be a technical exercise, and the standard review and comment period will be sixty days, as outlined in the Code regulations. Additional public involvement may occur where there is a clear need (see section 8.2) and as landscape unit planning addresses a broader range of forest resources. Public involvement beyond the sixty day review and comment period will be contingent on agency capacity and any implications for the pace at which landscape unit objectives can be established. During the initial round of landscape unit planning, officials should balance the desired degree of public involvement with the need to establish landscape level biodiversity objectives in a timely manner.
- Where active public involvement occurs, it may take place in the form of public meetings, discussion papers, workshops, or advisory groups.
- Public participants may provide information and local knowledge about resources and resource uses, and offer advice on how forest resources should be developed. Given the statutory responsibilities of the DM and DEO, the public role will be advisory in all cases.
- The DM and DEO may also engage in informal working arrangements with groups, such as resource licensees, to cooperatively gather and analyze information, and to participate in developing proposals for landscape design.

8.2 The Role of Participants in Landscape Unit Planning

Table 8.1 lists key individuals and groups who may be consulted in the preparation of landscape unit plans. Provincial and federal agencies beyond the MOF and MELP may also be involved in plan preparation, especially at the referral stage.

Table 8.1. Participants in Landscape Unit Planning

Key individuals and groups who may be involved in landscape unit planning
Non-government • LRMP participants, Regional Planning Tables and Follow-up Committees • local forest resource users (tenured) • local forest resource users (non-tenured) • local users of other resources (e.g., mineral tenure holders) • environmental and community groups • members of the general public
Local government and First Nations • local Government (regional and municipal) • First Nations

The following criteria should be considered in determining the nature and extent of public involvement in the preparation and establishment of landscape unit objectives and strategies:

- the frequency of the individual or groups activity in the landscape unit;
- the extent and nature of tenured interests;
- the complexity and significance of resource values;
- history of resource use conflicts in the landscape unit;
- existing land and resource use agreements (e.g., LRMPs, zoning);
- direction in RLUPSs or detailed district landscape unit planning strategies;
- the degree of urgency for preparing and establishing landscape unit objectives and strategies; and
- the quantity and quality of information that the district has and its analytical capacity.

If members of the public are involved in several landscape units, particularly when they hold key information and analytical resources, it is advisable to establish agreements on the nature of their participation.

The nature of the public's role will determine at what stage they should be involved in the landscape unit planning process.

- Provision of information and data is an early step in the process and precedes any significant analysis;
- Analysis is the precursor to design, but is often integrated with various iterations of the design;
- Review and comment occur near the end of the process when design work is completed and draft objectives are in hand; and
- Monitoring occurs as landscape unit objectives and strategies are implemented.

Note: Public involvement has not been included in the technical procedures section of this guide because public involvement requirements and methods may vary on a landscape-unit specific basis.

The nature of public interest and the information the public can provide will influence the stage at which they participate in the process. Table 8.2 provides suggestions on relevant information and potential public involvement roles at different stages in the landscape unit planning process.

Table 8.2. Potential Roles of Public Participants and Possible Information They May Provide

Possible Landscape Unit Information	Potential Role
1. First Nations	
• Traditional use information • Archaeological and cultural heritage information • Local knowledge & field experience • General information	• Review and comment • Assist in draft landscape unit design • Informal monitoring
2. LRMP Participants, Regional Planning Tables and Follow-up Committees	
• Established RMZ objectives • Other LRMP or regional plan information • Biodiversity emphasis for each landscape unit (if LRMP dealt with biodiversity emphasis) • Review and comment on the RLUPS • General information	• Review and comment • Formal monitoring (tied into overlap with RMZ monitoring)
3. Local Government, NGOs, General Public & Local Users of Non-Forest Resources (e.g. mineral tenure holders)	
• General information	• Review and comment • Informal monitoring
4. Forest Industry Technical Staff	
• Forest cover information • Ecosystem information • Operational planning information • Geophysical & hydrological information • Data & analytical systems • Mapping • Forest design capabilities • Local knowledge & field experience	• Review and comment • Provide technical information • Assist with analysis • Prepare mapping • Review landscape unit design (OGMAs, Patch Size) • Provide data & analyses for monitoring • Participate in pilot projects
5. Other Local Forest and Range Resource Users	
• Information on forest resources • Ecosystem information • Mapping • Local knowledge & field experience • Data & analytical systems	• Review and comment • Provide technical information • Assist in draft landscape design • Informal monitoring

SECTION D

IMPLEMENTATION

Chapter 9

Implementing Landscape Unit Plans

9.0 Implementing Landscape Unit Objectives and Strategies in Forest Development Plans

Staff preparing landscape unit objectives must ensure that the objectives, strategies and implementation dates are technically sound and achievable. Once a landscape unit and objectives are established, operational plans for the area can only be approved if they are consistent with those objectives. The DM is responsible for ensuring that operational plans submitted by licensees are consistent with those objectives and strategies.

An operational plan in effect when landscape unit objectives are established is not affected by the higher level plan. The operational plan continues to guide operations on the ground and need not be amended. However once a landscape unit and its objectives are established, any operational plan or amendment to an operational plan submitted more than four months after the establishment of the objectives, must be consistent with those objectives.

In situations where several licensees operate in one landscape unit, the DM should ensure that — to the greatest extent possible within the constraints imposed by landscape unit conditions and licensee operating areas — there is a proportional distribution of impacts among licensees.

9.1 Review of Landscape Unit Plans

Landscape unit plans must be reviewed and amended as required to ensure their effectiveness. These reviews should occur regularly (at least every ten years for established landscape unit objectives, more frequently for strategies and draft objectives) and as required to reflect the results of monitoring initiatives, adaptive management, and new information.

Monitoring

Monitoring of various forms will be integral to the successful implementation of landscape unit planning. Various monitoring initiatives have been identified throughout this guide.

- monitoring will occur during implementation of landscape unit plans. Forest attributes (e.g. old seral stage distribution) must be monitored to ensure that desired future conditions for forest resources and resource uses are achieved.
- during the testing of draft objectives, impacts on harvest opportunity and short-term timber supply will be assessed.
- where non-spatial objectives for OGMAs are established, districts will work cooperatively with licensees annually to assess whether targets are being met.

Adaptive Management

Adaptive management is an important component of landscape unit planning. As experience and knowledge are gained through the implementation of landscape unit plans and through formal adaptive management projects, this information should be used in the review and potential amendment of landscape unit plans. Knowledge gained through adaptive management will also be critical in refining this guide.

9.2 Amending, Varying and Canceling Landscape Unit Objectives

Chief Forester Policy

Chief Forester policy direction in chapter 5 of *HLP:PP* document addresses requirements for amending, varying and canceling landscape unit objectives.

- an RMZ and objectives may come into effect after a landscape unit and objectives are established. If the landscape unit objectives are inconsistent with these, then landscape unit objectives must be amended within one year. Until the landscape unit objectives are amended, the RMZ objectives will prevail.
- if objectives for sensitive areas, interpretive forest sites, recreation sites, or recreation trails produce more accurate data that warrant a variation in landscape unit objectives, then the DM will consider varying the landscape unit objectives.
- if it is necessary to establish a sensitive area in a proposed landscape unit, the processes to establish, amend, vary, or cancel the objectives for the landscape unit and sensitive area should coincide whenever possible. This will simplify referrals, approvals and advertising.

APPENDICES

Appendix 1: Policy Direction on Representation

Appendix 2: Natural Disturbance Type Tables

Appendix 3: Wildlife Tree Tables

Appendix 4: Glossary

Appendix 5: Acronyms

Appendix 1

Policy Direction on Representation

BRITISH COLUMBIA Ministry of Forests Chief Forester

MEMORANDUM

File: 12500-02

May 25, 1998

To: District Managers, MOF
Designated Environment Officials, MELP

From: Larry Pedersen
Chief Forester

Re: Chief Forester Direction on Landscape Unit Objectives

The purpose of this memo is to provide Chief Forester direction, in accordance with section 4 of the *Forest Practices Code of British Columbia Act*, R.S.B.C. 1996 c. 159 with respect to landscape unit objectives. This direction specifically addresses how to consider representativeness when developing landscape unit objectives for old seral requirements.

I am aware that the implementation of landscape unit planning is stalled across the province because of lack of clarity on how to consider representativeness. Therefore, I have decided to take immediate steps to resolve this issue. It is my opinion at this time that applying representativeness requirements on a scale finer than the Biogeoclimatic Ecosystem Classification (BEC) variant represents a high risk that the Ministry of Forests will not be able to manage the Province's forest resources having regard to the immediate and long term economic benefits they may confer on British Columbia, as is required by section 4(b) of the *Ministry of Forests Act* R.S.B.C. 1996, c.300.

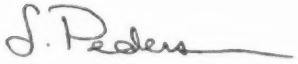
Therefore, I direct that District Managers not consider representativeness at a scale finer than the BEC variant level when establishing landscape unit objectives. I recognize and have considered that this is a coarser scale than recommended in the Biodiversity Guidebook. Please refer to the Guide to Landscape Unit Planning for procedures to implement this direction. I also request that Designated Environment Officials take this direction into account as a significant and relevant consideration in making their decision on whether to grant approval of the District Manager's decision to establish, vary or cancel an objective for a landscape unit.

I have asked Ministry of Forests Research Branch to design and lead a study to assess the risk this direction poses to biodiversity values. The Ministry of Environment, Lands and Parks will be a partner in the study. I may vary this direction:

- upon receipt of the results of a regional analysis which, in my view, demonstrates that the impacts of moving to a finer scale of representativeness are consistent with the levels of impact assumed in the *Forest Practices Code Timber Supply Analysis, February, 1996* (the Report); or,
- if the findings of the Research Branch study or other analyses indicate that biodiversity values are at an unacceptably high level of risk, and reducing that risk can be accommodated within the levels of impact assumed in the Report.

When reducing the level of risk to biodiversity cannot be accommodated within the levels of impact assumed in the Report, government may have to reconsider the magnitude of permissible timber supply impacts of the Forest Practices Code.

To the extent that the direction in this memorandum may be inconsistent with an objective for a resource management zone established as a higher level plan, the objective for the resource management zone prevails.



Larry Pedersen
Chief Forester

cc: Janna Kumi, Assistant Deputy Minister, MOF
Jon O'Riordan, Assistant Deputy Minister, MELP
Henry Benskin, Director, Research Branch, MOF

Appendix 2

Natural Disturbance Type Tables

The following are the key tables from the *Biodiversity Guidebook*.

1. Natural Disturbance Type 1

The following biogeoclimatic subzones and variants make up this disturbance type:

Table A2.1. Biogeoclimatic Units in NDT1

CWHvh1	ESSFvc	ICHvc
CWHvh2	ESSFvv	ICHvk1
CWHvm1	ESSFwc1 (north of the west arm of Kootenay Lake)	ICHvk2
CWHvm2	ESSFwc2	ICHwk1
CWHvm3	ESSFwc3	ICHwk2
CWHwh1	ESSFwc4 (north of the west arm of Kootenay Lake)	ICHwk3
CWHwh2	ESSFwk1	ICHwk4
CWHwm	ESSFwk2	MHmm1
	ESSFwk3	MHmm2
	ESSFwm (north of Crawford Creek)	MHwh1
	ESSFwv	MHwh2

Table A2.2. Seral Stage[a] Definitions for Biogeoclimatic Zones in NDT1

Biogeoclimatic unit	Mean event interval[b]	Early seral stage	Mature seral stage	Old seral stage
CWH[c]	250 yr	<40 yr	>80 yr	>250 yr
ICH	250 yr	<40 yr	<100 yr	>250 yr
ESSF	350 yr	<40 yr	>120 yr	>250 yr
MH	350 yr	< 40 yr	>120 yr	>250 yr

a) Seral stages can be defined by the ages presented in this table or by stand level attributes
- The early seral column should be used for partially cut stands with less than 30% of natural stand volume.
- Younger stands or partially cut stands can be considered mature if they provide the important habitat attributes of mature-aged stands.
- Older mature stands or partially cut stands can be considered old if they provide the important attributes of an old-aged stand.

b) This represents an average value over large geographic areas for each NDT. Consequently, forests can be older than the mean event interval.

c) Some portions of the CWH have a much more frequent disturbance history due to extensive windthrow. For those areas see the tables in NDT3.

Note: The mid-seral stage, between early and mature, is not included in this table.

Table A2.3. Recommended Old Seral Stage Distribution for NDT1 (% of forested area within a landscape unit)

Biogeoclimatic Unit	Old		
	L[a]	I[a]	H[a]
CWH	>13	>13	>19
ICH	>13	>13	>19
ESSF	>19	>19	>28
MH	>19	>19	>28

a) L represents the lower biodiversity emphasis option; I represents the intermediate emphasis option; and H represents the higher biodiversity emphasis option.

Note 1: Early and mature have been removed from this table to reflect government decisions and ongoing commitment to manage impacts. In NDT 1 old seral objectives only should be established.

Note 2: The lower biodiversity emphasis option was established on the assumption that it would not be applied to more than approximately half of the area of any biogeoclimatic subzone within a subregional plan or forest district.

Table A2.4. Recommended Distribution of Patch Sizes[a] for NDT1

patch size (ha)	% forest area within landscape unit
<40	30-40
40 - 80	30-40
80 - 250	20-40

a) Patch sizes refer to single cutblocks or an aggregation of cutblocks.

Note: These values represent a vision of desired future conditions. They will not be immediately achievable in landscape units.

Table A2.5. The Frequency with which Connectivity Characteristics of Natural Mature/Old Seral Stage Ecosystems occur for all Biogeoclimatic Subzones of NDT1

Natural connectivity characteristics	Frequency of occurrence
upland to upland	high
upland to stream	high
upland to wetland	high
cross-elevation	high
wetland complex	low – moderate
stream riparian	high
island remnants	low

2. Natural Disturbance Type 2

The following biogeoclimatic subzones and variants make up this disturbance type:

Table A2.6. Biogeoclimatic Units in NDT2

CDFmm	ESSFmc	ICHmc1
	ESSFmk	ICHmc1a
CWHdm	ESSFmm1	ICHmc2
CWHds1	ESSFmm2	ICHmk3
CWHds2	ESSFmv1	ICHmm
CWHmm1	ESSFmv2	ICHmw1
CWHmm2	ESSFmv3	ICHmw2
CWHms1	ESSFmv4	ICHwc
CWHms2	ESSFmw	
CWHws1	ESSFwc1 (south of the west	SBSvk
CWHws2	arm of Kootenay Lake)	SBSwk1 (mountain)
CWHxm1	ESSFwc4 (south of the west	SBSwk2
CWHxm2	arm of Kootenay Lake)	
	ESSFwm (south of Crawford Creek)	SWBdk
	ESSFxv	SWBdks
		SWBmk
		SWBmks
		SWBvks

Table A2.7. Seral Stage[a] Definitions for Biogeoclimatic Zones in NDT2

Biogeoclimatic unit	Mean event interval[b]	Early seral stage	Mature seral stage	Old seral stage
CWH	200 yr	<40 yr	>80 yr	>250 yr
CDF	200 yr	<40 yr	>80 yr	>250 yr
ICH	200 yr	<40 yr	>100 yr	>250 yr
SBS	200 yr	<40 yr	>100 yr	>250 yr
ESSF	200 yr	<40 yr	>120 yr	>250 yr
SWB	200 yr	<40 yr	>120 yr	>250 yr

a) Seral stages can be defined by the ages presented in this table or by stand-level attributes.
- The early seral column should be used for partially cut stands with less than 30% of natural stand volume.
- Younger stands or partially cut stands can be considered mature if they provide the important habitat attributes of mature-aged stand.
- Older mature stands or partially cut stands can be considered old if they provide the important attributes of an old-aged stand.

b) This represents an average value over large geographic areas for each NDT. Consequently, forests can be older than the mean event interval.

Note: The mid-seral stage, between early and mature, is not included in this table.

Table A2.8. Recommended Old Seral Stage Distribution for NDT2 (% of forest area within a landscape unit)

Biogeoclimatic unit	Old		
	L[a]	I[a]	H[a]
CWH	>9	>9	>13
CDF	>9	>9	>13
ICH	>9	>9	>13
SBS	>9	>9	>13
ESSF	>9	>9	>13
SWB	>9	>9	>13

a) L represents the lower biodiversity emphasis option; I represents the intermediate emphasis option; H represents the higher biodiversity emphasis option.

Note 1: Early and mature seral stage information has been removed from this table to reflect government decisions and ongoing commitment to manage impacts. In NDT 2 old seral objectives only should be established.

Note 2: The lower biodiversity emphasis option was established based on the assumption that it would not be applied to more than approximately half of the area of any biogeoclimatic subzone within a subregional plan or forest district.

Table A2.9. Recommended Distribution of Patch Sizes[a] for NDT2

patch size (ha)	% forest area within landscape unit
<40	30 - 40
40 - 80	30 - 40
80 - 250	20 - 40

a) Patch size refers to a single cutblock or an aggregation of cutblocks.

Note: These values represent a vision of desired future conditions. They will not be immediately achievable in landscape units.

Table A2.10. The Frequency with which Connectivity Characteristics of Natural Mature/Old Seral Stage Ecosystems occur for all Biogeoclimatic Subzones of NDT2

Natural connectivity characteristics	Frequency of occurrence
upland to upland	high
upland to stream	moderate
upland to wetland	moderate
cross-elevation	high
wetland complex	low
stream riparian	high
island remnants	low

3. Natural Disturbance Type 3

The following biogeoclimatic subzones and variants make up this disturbance type:

Table A2.11. Biogeoclimatic Units in NDT3

Douglas-fir restricted or absent		Douglas-fir throughout	
BWBSdk1	MSdc	ICHdk	SBSdh1
BWBSdk2	MSxk	ICHdw	SBSdh2
BWBSmw1	MSxv	ICHmk1	SBSdw1
BWBSmw2		ICHmk2	SBSdw2
BWBSvk	SBPSdc		SBSdw3
BWBSwk1	SBPSmc	ICHmw3	SBSmh
BWBSwk2	SBPSmk		SBSmw
BWBSwk3	SBPSxc	MSdk	
		MSdm1	
	SBSdk	MSdm2	
	SBSmc1		
	SBSmc2		
	SBSmc3		
	SBSmk1		
	SBSmk2		
ESSFdc	SBSmm		
ESSFdk	SBSwk1 (plateau)		
ESSFdv	SBSwk3		
ESSFxc			

Table A2.12. Seral Stage[a] Definitions for Biogeoclimatic Zones in NDT3

Biogeoclimatic unit	Mean event interval[b]	Early seral stage	Mature seral stage[a]	Old seral stage
BWBS[c]	100 yr	<20 yr	>80 yr	>100 yr
SBPS	100 yr	<40 yr	>100 yr	>140 yr
BWBS[d]	125 yr	<40 yr	>100 yr	>140 yr
SBS	125 yr	<40 yr	>100 yr	>140 yr
MS	150 yr	<40 yr	>100 yr	>140 yr
ESSF	150 yr	<40 yr	>120 yr	>140 yr
ICH	150 yr	<40 yr	>100 yr	>140 yr
CWH[e]	100 yr	<40 yr	>80 yr	>140 yr

a) Seral stages can be defined by the ages presented in this table or by stand-level attributes.
   - The early seral column should be used for partially cut stands with less than 30% of natural stand volume.
   - Younger stands or partially cut stands can be considered mature if they provide the important habitat attributes of a mature-aged stand.
   - Older mature stands or partially cut stands can be considered old if they provide the important attributes of an old-aged stand.

b) This represents an average value over large geographic areas for each NDT. Consequently, forests can be older than the mean event interval.

c) BWBS with deciduous prominent.

d) BWBS with coniferous prominent.

e) Those portions of the CWH subject to regular extensive windthrow disturbance.

Note: The mid-seral stage, between early and mature, is not included in this table.

Table A2.13. Recommended Seral Stage Distribution for NDT3 (% of forest area within a landscape unit).

Biogeoclimatic unit	Mature			Old			Mature + Old[a]		
	L[b]	I[b]	H[b]	L	I	H	L	I	H
BWBS[c]	0	10	15	>13	>13	>19	>13	>23	>34
SBPS	1	10	15	>7	>7	>10	>8	>17	>25
BWBS[d]	0	12	18	>11	>11	>16	>11	>23	>34
SBS	0	12	18	>11	>11	>16	>11	>23	>34
MS	0	12	18	>14	>14	>21	>14	>26	>39
ESSF	0	9	13	>14	>14	>21	>14	>23	>34
ICH	0	9	13	>14	>14	>21	>14	>23	>34
CWH[e]	0	12	18	>11	>11	>16	>11	>23	>34

a) The minimum requirements for the old seral stage is included in the Mature +Old category
b) L represents the lower biodiversity emphasis option; I represents the intermediate emphasis option; and H represents the higher biodiversity emphasis option. Note: The lower biodiversity emphasis option was established based on the assumption that it would not be applied to more than approximately half of the area of any biogeoclimatic subzone within a subregional plan or forest district.
c) BWBS with deciduous prominent.
d) BWBS with coniferous prominent. Note: In much of the BWBS, commercial species are found largely or entirely on alluvial sites. In such cases, seral stage objectives should be applied to those commercial species stands separately from the adjacent upland forest.
e) Those portions of CWH subject to regular extensive windthrow disturbances.

Note: The early seral stage information has been removed from this table to reflect governments decisions and ongoing commitment to manage impacts.

Table A2.14. Recommended Distribution of Patch Sizes[a] for Biogeoclimatic Subzones with Douglas-fir Throughout Stands in NDT3

patch size (ha)	% forest area within landscape unit
<40	20 - 30
40 - 80	25 - 40
80 - 250	30 - 50

a) Patch size refers to a single cutblock or an aggregate of cutblocks.

Note: These values represent a vision of desired future conditions. They will not be immediately achievable in landscape units.

Table A2.15. Recommended Distribution of Patch Sizes[a] for Biogeoclimatic Subzones with Douglas-fir Restricted or Absent in NDT3

patch size (ha)	% forest area within landscape unit
<40	10 - 20
40 - 250	10 - 20
250 - 1000	60 - 80

a) Patch size refers to a single cutblock or an aggregate of cutblocks.

Note: These values represent a vision of desired future conditions and will not necessarily be initially achievable in a watershed where forest operations are just beginning.

Table A2.16. Recommended Distribution of Patch Sizes[a] for Alluvial Ecosystems in the BWBS Biogeoclimatic Zone in NDT3

patch size (ha)	% forest area within landscape unit
<20	30 - 50
20 - 40	30 - 50
40 - 80	10 - 30

a) Patch size refers to a single cutblock or an aggregate of cutblocks.

Note: These values represent a vision of desired future conditions. They will not be immediately achievable in landscape units.

Table A2.17. The Frequency with which Connectivity Characteristics of Natural Mature/Old Seral Stage Ecosystems Occur for all Biogeoclimatic Subzones of NDT3

Frequency of occurrence by biogeoclimatic unit			
Natural connectivity characteristics	**SBPS SBSdk SBSmk SBSmc3 SBSwk1 SBSdw BWBSmw BWBSdk BWBSwk**	**MSxv**	**All other subzones**
upland to upland	low	moderate - high	low -moderate
upland to stream	low	moderate - high	low - moderate
upland to wetland	low	moderate - high	high
cross-elevational	low	low	moderate
wetland complex	high	high	moderate
stream riparian	low	low	high
island remnants	high	moderate	moderate

4. Natural Disturbance Types NDT4

The following biogeoclimatic subzones and variants make up this natural disturbance type:

Table A2.18. Biogeoclimatic Units in NDT4

BGxh1	IDFdk1	IDFu	PPdh1
BGxh2	IDFdk1a	IDFww	PPdh2
BGxh3	IDFdk2	IDFxh1	PPxh1
BGxw1	IDFdk3	IDFxh1a	PPxh2
BGxw2	IDFdk4	IDFxh2	
	IDFdm1	IDFxh2a	
ICHxw	IDFdm2	IDFxm	
	IDFmw1	IDFxw	
	IDFmw2		

The seral stage of the current plant community is determined by the presence and abundance of species compared to their status in the potential natural community (PNC). Early seral stages have 0 - 25% of the composition of the PNC, mid-seral stages have 25 - 50% of the PNC, late-seral stages have 50 - 75% of the PNC, and PNC-climax stages have 75 - 100% of the PNC.

Range lands in early seral condition often require several decades before an upward trend to mid-seral condition is complete, even under the most favorable management regime. Therefore, sufficient areas of rangeland in early to mid-seral condition should be managed to achieve seral targets in the long term. Those targets are:

Table A2.19. Recommended Seral Stage Distribution for Rangeland

	Early mid-seral	Late seral+climax	Climax
Percent of landscape unit	<15% combined (< 10% early)	> 85%	>12%
Note 1: Where low or intermediate biodiversity options are chosen, the above seral stage targets will not be achievable due to the very slow (decades) successional process.			
Note 2: This table may also be applicable to ecosystems in other NDTs which are predominantly range land have a significant range component.			

Table A2.20. Seral Stage[a] Definitions for Biogeoclimatic Zones in NDT4

Biogeoclimatic unit	Mean event interval[b]	Early seral stage	Mature seral stage[a]	Old seral stage
ICH	250 yr	<40 yr	>100 yr	>250 yr
IDF	250 yr	<40 yr	>100 yr	>250 yr
PP	250 yr	<40 yr	>100 yr	>250 yr

a) Seral stages can be defined by the ages presented in this table or by stand-level attributes.
- The early seral column should be used for partially cut stands with less than 30% of natural stand volume.
- Younger stands or partially cut stands can be considered mature if they provide the important habitat attributes of a mature-aged stand .
- Older mature stands or partially cut stands can be considered old if they provide the important attributes of an old-aged stand .

b) This represents an average value over large geographic areas for each NDT. Consequently, forests can be older than the mean event interval.

Note: The mid-seral stage, between early and mature, is not included in this table.

Table A2.21. Recommended Seral Stage Distribution for NDT4 (% of forest area within a landscape unit).

Biogeoclimatic unit	Mature			Old			Mature + Old[a]		
	L[b]	I[b]	H[b]	L	I	H	L	I	H
ICH	4	21	32	>13	>13	>19	>17	>34	>51
IDF	4	21	32	>13	>13	>19	>17	>34	>51
PP	4	21	32	>13	>13	>19	>17	>34	>51

a) The minimum requirement for the old seral stage is included in the mature +old category
b) L represents the lower biodiversity emphasis option; I represents the intermediate emphasis option; and H represents the higher biodiversity emphasis option.

Note 1: The early seral stage information has been removed from these tables to reflect governments decisions and ongoing commitment to manage impacts.

Note 2: the lower biodiversity emphasis option was established based on the assumption that it would not be applied to more than approximately half of the area of any biogeoclimatic subzone within a subregional plan or forest district

Table A2.22. Recommended Distribution of Patch Sizes[a] for NDT4

patch size (ha)	% forest area within landscape unit
<40	30 - 40
40 - 80	30 - 40
80 - 250	20 - 30

a) Patch size refers to a single cutblock or an aggregation of cutblocks.

Note: These values represent a vision of desired future conditions. They will not be immediately achievable in landscape units.

Table A2.23. The Frequency with which Connectivity Characteristics of Natural Mature/Old Seral Stage Ecosystems Occur for all Biogeoclimatic Subzones of NDT4

	Frequency of occurrence by biogeoclimatic unit	
Natural connectivity characteristics	**IDFdk**	**All other subzones**
upland to upland	moderate - high	high
upland to stream	moderate - high	high
upland to wetland	moderate - high	high
cross-elevational	low	high
wetland complex	high	low - moderate
stream riparian	low	high
island remnants	moderate	low

5. Natural Disturbance Type 5

The following biogeoclimatic subzones and variants make up this disturbance type:

Table A2.24. Biogeoclimatic Units in NDT5

ESSFdcp1	ESSFmvp4	MHmmp1
ESSFdcp2	ESSFmwp	MHmmp2
ESSFdkp	ESSFvcp	MHwhp1
ESSFdvp	ESSFvvp	MHwhp2
ESSFmcp	ESSFwcp2	
ESSFmkp	ESSFwcp3	
ESSFmmp1	ESSFwcp4	AT
ESSFmmp2	ESSFwmp	
ESSFmvp1	ESSFwvp	
ESSFmvp2	ESSFxcp	
ESSFmvp3	ESSFxvp	

This NDT is made up of alpine tundra and sub-alpine park land. The ecosystems in this NDT occur above or immediately below the alpine tree line. They are not included in the seral stage distribution or patch size distribution because they are not considered forested ecosystems and are not areas managed for forestry.

Appendix 3

Wildlife Tree Tables

Table A3.1. Percentage of a cutblock required in wildlife tree retention[20] when landscape units have been designated and landscape level biodiversity objectives have been established

%of the area available for harvesting in a landscape unit that has already been harvested without wildlife tree retention	%of the biogeoclimatic subzone within the landscape unit available for harvest				
	90	70	50	30	10
10	7	5	3	1	0
30	9	7	5	3	1
50	11	9	7	5	3
70	13	11	9	7	5
90	15	13	11	9	7

Note: The table axes refer to the area of the landscape unit.

Table A3.2. Percentage of a cutblock area required in wildlife tree retention[21] when landscape units have not been designated

%of the area available for harvesting that has already been harvested without recommended wildlife tree retention	% of the biogeoclimatic subzone within the landscape unit available for harvest				
	90	70	50	30	10
10	10	8	6	4	3
30	12	10	8	6	4
50	14	12	10	8	6
70	16	14	12	10	8
90	18	16	14	12	10

Note: The table axes refer to the area of the landscape unit.

[20] Refers to the amount of wildlife tree retention required in either the total area under prescription (TAUP), or adjacent suitable timber that is within 500m.

[21] See footnote 19 above.

Appendix 4

Glossary

Adaptive management: an approach to managing uncertainty that emphasizes learning by trial. Management policies and practices are adopted, based on best available information, and monitored to assess effects. Adaptations to those policies and practices are made periodically, on the basis of monitoring information to incorporate "lessons learned".

Biogeoclimatic ecosystem classification: a hierarchical classification scheme having three levels of integration: regional, local and chronological; and combining climatic, vegetation and site factors.

Biogeoclimatic zone: a geographic area having similar patterns of energy flow, vegetation, and soils as a result of a broadly homogenous macro-climate. British Columbia has 14 biogeoclimatic zones.

Biodiversity: the diversity of plants, animals and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them.

Connectivity: the degree to which late successional ecosystems are linked to one another to form an interconnected network. The degree of interconnectedness and the characteristics of the linkages vary in natural landscapes based on topography and natural disturbance regime.

Consistency: management objectives or prescriptions in one plan that direct on-the-ground activities do not materially conflict with management objectives or prescriptions in another plan.

Constrained: part of the timber harvesting land base subject to constraints on harvesting due to land use or integrated resource management objectives (e.g., visual quality, ungulate winter range).

Cultural heritage resource: an object, a site, or the location of a traditional social practice of historical, cultural or archaeological significance to the province, a community or an aboriginal people. Cultural heritage resources include archaeological sites, structural features, heritage landscape features, and traditional use sites.

Draw down: the reduction of the old growth percentage to below the targets indicated in appendix 2 of this guide, due to probable economic and social consequences of halting timber harvesting.

Early seral: forests that are either age class one or two, younger than 40 years old.

Ecosystem: a functional unit consisting of all living organisms (plants, animals and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size – a log, pond, field, forest or the earth's biosphere, but it always functions as a unit. Ecosystems are commonly described according to the major type of vegetation; for example, a forest ecosystem.

Forest Ecosystem Network (FEN): means an area

a) established under a higher level plan, or

b) approved by the district manager and an employee of the Ministry of Environment, Lands and Parks before June 15, 1995,

for the purpose of maintaining or restoring the natural connectivity within an area, but a forest ecosystem network established under paragraph (b) expires on June 15, 2003.

Forest resources: defined in the *Forest Practices Code of British Columbia Act* as resources and values associated with forests and range including, without limitation, timber, water, wildlife, fisheries, recreation, botanical forest products, forage and biological diversity.

Fragmentation: the process of transforming large continuous patches into one or more smaller patches surrounded by disturbed areas. In forest management, this occurs naturally through such agents as fire, landslides, windthrow, and insect attack. In managed forests, timber harvesting and related activities have been the dominant agents that create fragmentation.

Higher level plan (HLP): defined in the *Forest Practices Code of British Columbia Act* as an objective for:

- an RMZ;
- a landscape unit or sensitive area; or
- a recreation site, recreation trail, or interpretive forest site.

Land and Resource Management Planning (LRMP): an integrated sub-regional consensus-based process requiring public participation that produces a Land and Resource Management Plan for review and approval by government. The plan establishes direction for land use and specifies broad resource management objectives and strategies.

Landscape unit: an area of land and water used for long-term planning of resource management activities. It is important for designing strategies and patterns for landscape level biodiversity and for managing other forest resources. A landscape unit may be used by the DM to establish objectives for any purpose permitted under section 2 of the *Forest Practices Code of British Columbia Act*.

Local planning: a term referring to a variety of resource planning initiatives undertaken to develop integrated approaches to resource use and development. Typically, these have been undertaken to resolve potential land use conflicts in areas smaller than LRMPs.

Local Resource Use Plan (LRUP): a plan approved by the DM for a portion of the Provincial Forest that provides area specific resource management objectives for integrating resource use in that area. These plans are prepared pursuant to section 4(c) of the *Ministry of Forests Act*.

Mature seral: generally, trees 80 to 120 years old or older, depending on species and site conditions. The age and structure of the mature seral will vary significantly by forest type and form one biogeoclimatic zone to another.

Monitoring: procedures and activities associated with assessing the extent to which a plan or program is undertaken, consistent with its design or implementation plan.

Natural disturbance type (NDT): an area characterized by a natural disturbance regime. There are five natural disturbance types identified for managing biological diversity.

Non-contributing (NC): the crown forested land base that does not contribute to AAC but does contribute to biodiversity objectives and targets. It includes parks, riparian reserves, inoperable forest and any other 100% netdown areas, and partial netdowns, such as environmentally sensitive areas as defined by the Timber Supply Review.

Objective: a concise, measurable statement of a desirable future condition for a resource or resource use which is attainable through management action.

Old growth/old seral: forests of a certain age or forests with the appropriate old forest attributes. Old growth and old seral are used interchangeably.

Old Growth Management Area (OGMA): defined in the *Forest Practices Code of British Columbia Act* Operational Planning Regulation as an area established under a higher level plan which contains or is managed to replace structural old growth attributes.

Operational plans: within the context of the *Forest Practices Code of British Columbia Act*, operational plans detail the logistics for forest and range development in particular locations. Methods, schedules, and responsibilities for accessing, harvesting, renewing, and protecting the resource are set out to enable site specific operations to proceed. Operational plans include forest development plans, logging plans, range use plans, silviculture prescriptions, and stand management prescriptions.

Potential Natural Community (PNC): the plant community that would be established if succession were allowed to be completed without human interference.

Protected Area: a designation of areas of land and water set aside to protect natural heritage, cultural heritage or recreational values (may include national park, provincial park or ecological reserve designations).

Recruitment strategy: a long term strategy developed in areas where old growth is drawn down below targets. This strategy indicates how the target amount of old forest will be met by the end of the third rotation.

Regional land use plan: either the Cariboo Chilcotin Land Use Plan, the West Kootenay-Boundary Land Use Plan, the East Kootenay Land Use Plan, or the Vancouver Island Land Use Plan.

Regional Landscape Unit Planning Strategy (RLUPS): a strategy for establishing landscape units and objective in each forest region of the province.

Resource Management Zone (RMZ) – a geographic area within the larger planning area that is distinct from other geographic areas with respect to biophysical characteristics, resource values, or resource management direction. RMZs are normally delineated and corresponding resource management objectives and strategies defined as a consequence of a regional or sub-regional planning process. RMZs are a planning unit that may be established under the *Forest Practices Code of British Columbia Act*.

Sensitivity analysis: a technique used in evaluation for dealing with uncertainty. Sensitivity analysis occurs when alternative assumptions respecting uncertain variables are applied to assess the extent to which the evaluation result is influenced by changes in that variable. Sensitivity analysis provides a sense of the range of possible outcomes and helps to guide decision-making and direct the level of effort appropriate to lessen the extent of uncertainty surrounding the subject variables.

Seral stage distribution: the distribution of different aged ecosystems through time. In the context of this guide, the distribution of early, mature and old forests through time.

Strategic land use planning: a participatory style of planning for relatively extensive geographic areas that focuses on defining land and resource allocation and management goals and objectives and corresponding strategies.

Strategies: means of achieving a resource objective.

Timber Supply Review (TSR): an assessment of how current forest management practices will affect the supply of wood available for harvesting over time. It also assesses how timber supply may be affected by changes in management practices and uncertainties about forest inventory and growth.

Variant: a subdivision of a biogeoclimatic subzone. Variants reflect further differences in regional climate and are generally recognized for areas slightly drier, wetter, snowier, warmer or colder than other areas in the subzone.

Visual Quality Objective (VQO): a resource management objective established by the DM or contained in a higher level plan that reflects the desired level of visual quality based on the physical characteristics and social concern for an area. Five categories of VQO are commonly used: preservation; retention; partial retention; modification; and maximum modification.

Watershed: an area of land that collects and discharges water into a single main stream through a series of tributaries.

Wilderness: an area of land generally greater than 1000 ha that predominantly retains its natural character and on which the impact of humans is transitory and, in the long run, substantially unnoticeable.

Appendix 5

Acronyms Used in This Guide

AAC	Allowable Annual Cut
BEC	Biogeoclimatic Ecosystem Classification
BGB	Biodiversity Guidebook
BWBS	Boreal White and Black Spruce
CDC	Conservation Data Center
CWD	Coarse Woody Debris
CWH	Coastal Western Hemlock
DEO	Designated Environment Official
DM	District Manager
DSC	Data Service Center
ESSF	Engelmann Spruce-SubAlpine Fir
FDP	Forest Development Plan
FEN	Forest Ecosystem Network
FPC	Forest Practices Code
GIS	Geographic Information System
ICH	Interior Cedar-Hemlock
LRMP	Land and Resource Management Plan
LU	Landscape Unit
MELP	Ministry of Environment, Lands and Parks
MOF	Ministry of Forests
MOU	Memorandum of Understanding
MS	Montane Spruce
NC	Non-contributing land base
NDT	Natural Disturbance Type
OGMA	Old Growth Management Area
OPR	Operational Planning Regulation (Code)
PNC	Potential Natural Community
RD	Regional Director, MELP
RLUPS	Regional Landscape Unit Planning Strategy
RM	Regional Manager, MOF
RMZ	Resource Management Zone
SBPS	Sub-Boreal Pine Spruce
SP	Silviculture Prescription
SPR	Strategic Planning Regulation (Code)
TFL	Tree Farm License
THLB	Timber Harvesting Land Base
TSA	Timber Supply Area
TSR	Timber Supply Review
VQO	Visual Quality Objective
WTP	Wildlife Tree Patch
WTR	Wildlife Tree Retention

BRITISH COLUMBIA

Ministry of Forests

Ministry of Environment, Lands and parks

MEMORANDUM

File: 12500-05

March 17, 1999

To: Regional Managers and District Managers, Ministry of Forests
Regional Directors and Designated Environment Officials,
Ministry of Environment, Lands and Parks
All Staff Involved in Landscape Unit Planning

From: Larry Pedersen, Chief Forester, Ministry of Forests
Janna Kumi, Assistant Deputy Minister, Ministry of Forests
Jon O'Riordan, Assistant Deputy Minister, Ministry of Environment, Lands and Parks
Jim Walker, Special Advisor, Land Use, Ministry of Environment, Lands and Parks

Re: Release and Implementation of the Landscape Unit Planning Guide

The attached *Landscape Unit Planning Guide* is approved for distribution. The guide consolidates prior direction and information and presents new techniques and procedures to implement landscape unit planning.

Priorities for Landscape Unit Planning

The retention of old growth and wildlife trees is essential in providing a strong foundation for landscape-level biodiversity management, and is the priority for landscape unit planning. We must carefully plan the deployment of our limited corporate resources to deliver these priority objectives for all landscape units within three years.

Legal landscape unit objectives for other forest resources can be established where ministers have approved higher level plan objectives that deal with these values. In these cases, legal landscape unit objectives can be used to provide additional detail for more effective operational planning. The guide also provides the flexibility, with the cooperation of all affected licensees and in consultation with other stakeholders, to develop and test draft objectives, that are not legally binding, for resources other than old growth and wildlife trees. This testing must not impede our ability to deliver on priority objectives within three years.

Training and Implementation

Training of statutory decision-makers, government staff, forest industry contacts, and other involved individuals is essential for successful implementation of the guide. Headquarters staff are currently developing training materials that will be delivered commencing in May 1999.

To ensure consistent and informed application of the guide, finalization and approval of landscape unit objectives should not occur until training has been received and Regional Landscape Unit Planning Strategies have been reviewed and revised if necessary. In the interest of timely implementation, it is recommended that preparatory work such as inventory assembly and analysis, should proceed immediately based on the procedures in the guide and with active support from headquarters and regional specialists.

An Implementation Advisory Group, chaired by the Chief Forester, has been struck. This group will have an ongoing oversight role in managing successful implementation of landscape unit planning. It will also have a role identifying and proposing solutions to provincial implementation issues as they arise.

Review of Regional Landscape Unit Planning Strategies

It is important that you, in cooperation with staff from Forest Practices and Resource Stewardship Branches, review and revise your Regional Landscape Unit Planning Strategies to be consistent with the guide and chapter 5 of *Higher Level Plans: Policy and Procedures*. This will provide an opportunity for you to review proposed planning schedules, landscape unit boundaries and emphasis options in consultation with forest licensees and other affected stakeholders (if you have not already done this). This review is intended to deal with specific problem areas and must not be a major reworking of all boundaries and emphasis options across the province.

Revisions to all Regional Landscape Unit Planning Strategies must be completed by June 30, 1999. The Regional Manager should forward a copy of the revised, approved strategy to the Chief Forester for his information by July 7, 1999. Any exceptions to these deadlines, must be approved by the Forest Practices Code Joint Steering Committee.

Timber Supply Impacts and Operating Costs

The impact of landscape unit biodiversity objectives on provincial timber supply is not permitted to exceed 4.1% in the short-term and 4.3% over the long-term. We will continue to develop direction and management controls in addition to those outlined in the guide to ensure that this provincial commitment is met. In addition, you should thoroughly consider ways to minimize industry costs while maintaining biodiversity values during the development of landscape unit objectives. Minimizing costs should also be a consideration when reviewing landscape unit boundaries or biodiversity emphasis in Regional Landscape Unit Planning Strategies.

Monitoring

Monitoring implementation, compliance with the guide and overall effectiveness will be a key element for success of landscape unit planning. Staff from Forest Practices Branch and Resource Stewardship Branch in consultation with field staff will develop a detailed provincial monitoring strategy. This strategy should include formal annual reviews, compilation of results from districts and regions, more detailed evaluation in selected districts, and a quick response mechanism to deal with significant policy or technical issues. This quick response mechanism will include the Joint Steering Committee in consultation with the Implementation Advisory Group. Please cooperate with branch staff to develop and implement this strategy.

Please contact Allan Lidstone, Forest Practices Branch, or Judy Godfrey, Resource Stewardship Branch, if you have any questions or need further information.

Thank you in advance for your efforts to successfully manage and implement this initiative within the framework that we have established.

Original signed by
Larry Pedersen, Chief Forester
Ministry of Forests

Original signed by
Janna Kumi, Assistant Deputy Minister
Ministry of Forests

Original signed by
Jon O'Riordan, Assistant Deputy Minister
Ministry of Environment, Lands & Parks

Original signed by
Jim Walker, Special Advisor, Land Use
Ministry of Environment, Lands & Parks

Attachment

pc: John Allan, Deputy Minister, Ministry of Forests
Cassie Doyle, Deputy Minister, Ministry of Environment, Lands and Parks
Joan Hesketh, Assistant Deputy Minister, Energy & Minerals Division, Ministry of Energy and Mines and Minister Responsible for Northern Development